DOCUMENT RESUME

ED 123 885 FL 007 559

AUTHOR	Erasmie, Thord
TITLE	Language Development and Social Influence.
INSTITUTION	Linkoping Univ. (Sweden). Dept. of Education.
PUB DATE	75
NOTE	313p.; Ph.D. dissertation, Linkoping University
AVAILABLE FROM	Esselte Studium, S-112 85 Stockholm, Sweden (40 Swedish kronor)
EDRS PRICE	MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS	Children; Elementary Secondary Education; Environmental Influences; Language Ability; *Language Development; *Language Research; Longitudinal Studies; *Psycholinguistics; *Social Influences; Socioeconomic Influences; *Sociolinguistics
IDENTIFIERS	*Sweden

ABSTRACT

The studies reported here constitute part of a project on language development and social influence. The question of what to do to obtain a linguistic development that is not retarded by an unfavorable environment is discussed, relative to different value systems. In the first three chapters a theoretical background is given in which sociolinguistic and psycholinguistic theories, models and results are presented. The next three chapters describe a longitudinal investigation of 120 children, whose language abilities and socioeconomic background were studied during a nine-year period. The remainder of the book discusses the possibilities of eliminating those linguistic handicaps that are due to socioeconomic factors. Different pedagogical models are compared. It is recommended that the currently dominant pedagogy of mediation be replaced with a pedagogy of dialogue. Change in linguistic ability depending on social influences is discussed in Chapter 7. A pilot study using the "mamba" method, a new way of studying linguistic ability, is described in Chapter 8. Chapters 9 and 10 provide a summary and discussion. (Author/RM)

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ED123885

Linköping Studies in Education
Dissertations
No 7

LANGUAGE DEVELOPMENT
AND
SOCIAL INFLUENCE

By
Thord Erasmie

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
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EDUCATION

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Dissertations
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LANGUAGE DEVELOPMENT
AND
SOCIAL INFLUENCE

By
Thord Erasmie

Linköping 1975

Language Development and Social Influence

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Inquiries about the book should be made to:

The Director, Department of Education
Linköping University
S-581 83 Linköping, Sweden

ISBN 91-7372-038-0

Stil-Foto Tryck, Linköping 1975

"Competence refers to the Ideal, performance refers to the Fall."
Basil Bernstein

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ACKNOWLEDGEMENTS

The studies of this report constitute a part of the SOSP Project (abbr for Språkutveckling och Social Påverkan, i.e. Language Development and Social Influence). It would have been very difficult - not to say impossible - for me to carry out my studies without support from authorities and colleagues.

First I must mention Professor Ingvar Werdelin, my scientific supervisor and friend, Chairman of the Department of Education, Linköping School of Education. Without his encouragement, advice and affectionate pressure this thesis would never have been written.

I am greatly indebted to my other colleagues at the Department. Mr Sune Almroth has thus given me much support with the electronic data processing. Docent Karl Henrik Eriksson has provided me with creative ideas about the design of the report. I have had fruitful discussions about the syntactical analyses with Dr Hans Grundin. My colleagues in the SOSP Project, Mrs Anicka Burén, Mrs Anna-Britta Dahlén and Mrs Anica Nordfeldt have helped me in collecting and evaluating the data. Miss Monica Mac Dowall has translated into English Chapters 1-5 and 8-10 and Mr Lars Werdelin has translated Chapters 6 and 7.

Mrs Marianne Axelson, Mrs Kerstin Junehammar, Mrs Gunnel Råman and Mrs Marita Wiktorsson have typed the final manuscript. Mrs Noomi Swedberg has proof-read the manuscript. The school authority and the Fröbel Institute at Norrköping have supported me with practical arrangements for data collecting. I am deeply indebted to them all for their support.

During the period 1963-1975 I have received grants from the Swedish Council for Social Science Research, the Lars Hierta's Memorial Fund, the National Social Welfare Board and the Ministry of Social Welfare. Svenska Philips AB has supplied me with recording apparatus.

My family has not only had indulgence with me and with my work, which has involved long periods of my physical as well as mental absence, but they have also given me practical support with the coding of data, the checking of tables, the reading of manuscripts etc. I therefore want to thank Kerstin, Margareta, Mats and Katarina.

INTRODUCTION

In 1962 a nine-year comprehensive school was decided upon by the Swedish Riksdaq (Parliament), the fundamental principle of which was the idea of equality in the sphere of education: *Everybody should, irrespective of social conditions, get the same opportunity to obtain education.*

It was a mere chance that my first linguistic study happened to coincide with the Riksdaq resolution. On the other hand it was quite deliberately that the follow-up study, carried out in 1972, to some extent came to try out the possibilities of the new school system to affect the development of language. Language, school and society are the three main themes of this thesis.

Sociolinguistics involves the relating of linguistic behaviour to the factors of influence to which the individual is subjected. There is probably no sense in describing linguistic development without taking into consideration the environmental influences.

This work is sociolinguistic because its principal aim is to elucidate various factors, e.g. school and society, exerting an influence on the development of language. The results, reported here, coincide to some extent with the results obtained primarily from Anglo-Saxon sociolinguistic research. Like many other social scientists, I want to point out the importance of the social heritage with respect to the development of language. This in itself is interesting but even more interesting is the question which follows: What shall we do in order to obtain a linguistic development which is not retarded by an unfavourable environment? In this thesis, which is intended to be an introduction to an applied sociolinguistics, this question will be discussed, viewed relative to different value systems. The work has the following disposition.

In the first three chapters a theoretical background is given in which sociolinguistic theories and psycholinguistic theories, models and results are presented. Chapter 4 deals with the problems, the aims, experimental groups and design of the follow-up study which makes the empirical part of this thesis.

The results from the study carried out in 1963 which has previously been presented in my licentiate's thesis (Erasmie, 1964) are reported in Chapter 5. In Chapter 6 the results obtained from the study of 1972 are discussed. The linguistic ability viewed in relation to socio-economic influence is treated in particular. The two studies are compared in Chapter 7, by means of studying the changes in linguistic ability which have taken place between 1963 and 1972. In Chapter 8 a method to study sentence structure in texts will be presented. An analysis has been carried out for one of the three age groups included in the investigation. The various syntactical elements are related to different socio-economic predictors. A summary and a more comprehensive discussion are rendered in Chapter 9. Finally the results obtained are discussed from a more general point of view in Chapter 10. Measures are also suggested with the aim of cutting down the influence of negative socio-economic conditions. Particularly great attention has been devoted to the role of school. Various educational ideologies are estimated from a sociolinguistic angle.

Brief information on the SOSP Project

SOSP which stands for "Språkutveckling och Social Påverkan" (i.e. in English Language Development and Social Influence) is a research project which started in 1972. The aim of the project was twofold. On one hand the social governing factors during a longer period of time will be studied. This thesis is a final product of this part of the project. On the other hand linguistic ability in preschool children will be studied. This latter study, which is planned to be finished in 1976, aims at giving pre-primary school children linguistic training programmes applicable in practice.

The client and patron is Socialstyrelsen (i.e. The National Swedish Social Welfare Board).

Within the SOSP Project a few reports have been published. These are to be found under "References".

A few comments on the text

This thesis is written in English. Certain problems have arisen concerning the translation of certain concepts and references. In the appendix the tests will be reported as well as the instructions for using the sentence structure analysis. As a translation in these cases would have changed the context, the instructions mentioned above have been rendered in the original version, i.e. in Swedish. Swedish official reports have in general as a heading a title or an abbreviation, e.g. SIA, "Skolans Inre Arbete", i.e. The Inner Work of School. In accordance with Anglo-Saxon practice the reports have been named after the Chairman of the Committee that presented the report. Thus the report is called the Orring Report. In order to avoid obscurities the Swedish title will throughout be rendered within brackets.

Chapter 1

SOCIOLINGUISTICS VIEWED FROM AN EDUCATIONAL ASPECT

1.1 Introduction

Generally speaking the sociolinguist is concerned with the study of the relations between the forces of the social environment and the language used by the individual. The terms "sociology of language" and "sociolinguistics" are often used synonymously and there are hardly any precise boundaries between the definitions of the two terms. Bengt Loman (1972) gives the following definitions:

> "The sociology of language means, briefly, that sociological approaches and methods are applied to linguistic phenomena, whereas linguistic anthropology means that one applies anthropological ones. Sociolinguistics, on the other hand, may be described as a linguistic science which takes an interest in the social functions and varieties of language."
> (Loman, 1972, p. 5)

In his definition Loman emphasizes linguistics. Sociolinguistics in the sense used by Labov (1966) and Fishman (1970, 1972), emphasizes the sociological aspect of the term sociolinguistics.

Labov, who has been one of the most prominent figures during the short period in which sociolinguistics has existed as a science, is himself opposed to the use of the term sociolinguistics. He claims that the term is absurd since it is impossible to imagine a linguistic theory which is not sociological (Labov, 1972).

According to Charles A Ferguson the term sociolinguistics came to be used during the first few decades of this century. The social psychologist George Herbert Mead used the term to refer to language in social interaction, and the linguist Antoine Meillet tried to analyse the social influence of language by studying changes occurring in a language. (Ferguson, 1969 in Fishman, J. A., 1970)

Fishman (1972) believes that descriptive sociolinguistics should try to provide an answer to the question "Who speaks what language to whom and when and to what end:" The answer to Fishman´s question provides a description of the concept. According to Fishman, dynamic sociolinguistics tries to provide an answer to the question "What accounts for different rates of change in the social organization of language use and behaviour toward language?". Fishman (1970-72) tries to bring order into the sociolinguistic chaos by dividing the science into micro and macro sociolinguistics and applied sociolinguistics.

In the macro analysis speech varieties are recorded e.g. in a dialogue and they are analysed in relation to the social situation. Fishman maintains that the essential part of macro analysis is the description of the linguistic consequences of important social institutions.

Basil Bernstein's research may be considered an example of macro sociolinguistic research. By defining special linguistic codes, Bernstein wants to describe characteristic features in language usage, in different social classes.

Most sociolinguists seem to agree that sociolinguistics is actually old linguistics viewed in a clearer light. Halliday (1971) stresses the fact that language behaviour can be described in two different types of contexts - cultural context and situational context. Halliday derived these terms from Malinowski, who used them as early as in 1923. Halliday considers language as a form of behaviour potential. The 'cultural context' is the framework for the total set of possible choices, while the situational context will be the framework for any particular choice that is made from them. Thus the cultural context defines the potential, i.e. the total set of options available to the individual. The actual choice among these possibilities is thus dependent on a given situational context. The cultural context is dependent on socio-economic factors like i.e. social status, educational background and culture. In accordance with Halliday's vays of reasoning the situational context will be dependent on the quality and the quantity of the cultural context.

According to Halliday, sociolinguistics seeks to describe the functioning of language in different social contexts. This implies certain theoretical difficulties concerning levels of sociolinguistic analysis, which presupposes a qualitative gradation. An important problem here is to find out what is meant by good and bad language. Later in this chapter I will more closely examine the criteria used by different linguists and social scientists in order to describe the different levels of social contexts.

1.2 Sociolinguistics focused on society

Early sociolinguistics in the fifties and in the early sixties was mainly concerned with the determination of dialectal varieties and differences in modes of expression between various ethnic groups, social groups, races etc. Recent sociolinguistics which, above all, developed under the guidance of Basil Bernstein is more concerned with trying to throw light upon different ways of communications, typical of people in certain social classes. The aim of sociolinguistics is to find explanatory models and remedial measure programmes, too. It tries to even out social inequalities resulting from a lack of positive social influence; it seeks to increase the understanding of linguistic handicaps of a social origin; it aims at influencing society so that linguistic disadvantages due to socio-economic factors can be eliminated. Sociolinguistic research has up till now far too often talked about linguistic handicaps and discussed what measures ought to be taken. When the concept of verbal deprivation has been defined, one has assumed the existence of some kind of official language which is considered to be of a superior quality. This way of arguing is dangerous because it preserves a class separation which after all exists even in our Swedish society.

The research emanating from Basil Bernstein and his followers stands out from other socioeducational linguistic research in that it not only states the existence of language differences but also tries to find out what causes them; it does not judge these causes on a scale of values.

Bengt Loman (1974) points out that Bernstein all the time underlines the fact that the differences do not lie in competence but in performance. This implicates that every human being has a rich verbal potential, but external factors like education, occupation and class affiliation lead us to use this potential differently. Conflicts arise (according to Loman's interpretation) in transitions from one code to another - from one identity to another. In order to get some knowledge of the functioning of language in different situations the situational context which produces a communicative event will have to be taken into consideration. The concept of context stands for the significance of a statement in relation to a given situation. Holmlund (1974) believes that the interaction between the speaker and the speech situation is the context of language or, in other words, that which evokes the linguistic communication. The linguistic meaning of the concept of context is focused rather on meaning than on comprehension in relation to something else.

The most important task of sociolinguistics will be to compare different situational contexts, analyse their differences and then return to the cultural context which caused the differences. Consequently, sociolinguistics becomes in the first place descriptive, in the second place explanatory and theoretical. Sociolinguistics will not only point to probable causal relations but also try to provide alternative solutions of how to exert an influence on the cultural context.

The situational context is dependent on the competence of the individual and on his performance. The concepts of competence and performance have been defined and specified by Noam Chomsky in his linguistic theory launched in 1957. In a discussion of Chomsky's theories, Greene (1973, p.94) gives the following definitions of "competence" and "performance":

> "Attempts to settle the demarcation dispute between linguistics and psychology have centred on a distinction between competence, considered the concern of linguistics, and performance, considered the concern of psychology. Competence is taken as referring to language in the sense of what constitutes ability to speak a language. Performance, on the other hand, refers to the actual utterances made by language users, the point being that there may not always be an exact correspondence between a speaker's utterances and the linguistic rules of the language.
>
> This separation of the language and the language user operates on several levels. In the first place, actual and potential utterances are all a linguist has to go on when trying to define linguistic competence; it is there-

> fore clearly a problem of speaker's utterances, and even their linguistic intuitions, are not a true reflection of their knowledge of the language. Such lapses can be put down to performance factors such as perceptual and memory limitations but this still leaves the difficulty of deciding which utterances are true indications of the speaker's competence and which are performance deviations."

Holmlund (1974) discusses the concepts of competence and performance in her thesis. She shows that certain scholars like Flavell and Wohlwill (1969) and Mehler and Bever (1968) have considered the concept of competence dependent on situational factors.Bruner (1971, from Holmlund 1974) thinks that the concept of competence should be extended to include acquired rules for the application of abilities.

1.3 Linguistic codes

1.3.1 The concept of linguistic code

The concept of linguistic codes was introduced by above all the English social scientist Bernstein. This concept was used for the first time by him in 1962. I will account for it here in more detail.

The concept of linguistic code has obtained the meaning which Bernstein intended for it, i. e. a language used by a specific (defined) group of people in a certain social context. The concept implies in general that different varieties of language develop in individuals with different social backgrounds. For a further discussion it may be essential to make a distinction between manifest and artificial codes. By manifest code is meant the linguistic code acquired by the individual through his social heritage. This particular code is gradually acquired by the child during its first few years of life. By artificial code is meant the various uses of language in communication in different situations. If I speak to a small child I use simple grammar; if I speak to a physician I speak in a different way. These artificial codes, used to facilitate communication, are also dependent on the manifest code.

1.3.2 Bernstein's linguistic codes

Bernstein (1961) speaks about two essential forms of linguistic codes. These two codes are: elaborated code and restricted code. Chomsky (1971) on the other hand stresses the point that he uses the concept of code to describe the selection and organization of speech situations. Bernstein (1971) also emphasizes that the codes refer to cultural, not to genetic controls of the speaker's choice. Thus, according to Bernstein, the codes concern the performance, not the competence, in the sense given to these terms by Chomsky (see the discussion above).

Elaborated code is according to Bernstein characterized by the following criteria:

1. Accurate grammatical order and syntax regulate what is said.
2. Logical modifications and stress are mediated through a grammatically complex sentence construction, especially through the use of a range of conjunctions and subordinate clauses.
3. Frequent use of prepositions which indicate logical relationships as well as prepositions which indicate temporal and spatial contiguity.
4. Frequent use of the personal pronoun "I".
5. A discriminative selection from a range of adjectives and adverbs.
6. Individual qualification is verbally mediated through the structure and relationship within and between sentences.
7. Expressive symbolism discriminates between meanings within speech sequences rather than reinforcing dominant words or phrases, or accompanying the sequence in a diffuse, generalised manner.

The restricted code is distinguished by the following characteristics:

1. Short, grammatically simple, often unfinished sentences with a poor syntactical form stressing the active voice.
2. Simple and repetitive use of conjunctions (so, then, because).
3. Little use of subordinated clauses to break down the initial categories of the dominant subject.
4. Inability to hold formal subject through a speech sequence; thus a dislocated informational content is facilitated.
5. Rigid and limited use of adjectives and adverbs.
6. Infrequent use of impersonal pronouns as subjects of conditional clauses.
7. Frequent use of statements where the reason and conclusion are confounded to produce a categoric statement.
8. A large number of statements/phrases which signal a requirement for the previous speech sequence to be reinforced: "Wouldn't it?" "You know?" "Isn't it terrible?" "Isn't it a shame?" "It's only natural, isn't it?" etc. This process is termed "sympathetic circularity".
9. *The individual qualification is implicit in the sentence organization: it is a language of implicit meaning.*

(Bernstein, 1961, pp. 288-313)

1.3.3 Syntactic and semantic definitions of the concept of code.

A given code may include a varying number of lexical and syntactic units. This results in a great semantic variation. Defining the two codes in terms of the characteristics of elaborated and restricted codes provided by Bernstein seems to be quite easy with respect to the syntactic aspect. The semantic aspect is harder to define. Bernstein maintains that the elaborated code has a universalistic meaning, while the restricted code has a more particularistic one. Bernstein tries to explain these concepts by defining four different types of context (Bernstein, 1971).

1. The regulating context - e. g. authority relationships, where the child is made to obey the rules of the moral order and their various backings.
2. The instructional context, where the child learns about the objective nature of objects and persons, and acquires skills of various kinds.
3. The imaginative or innovating contexts, where the child is encouraged to experiment and re-create his world on his own terms and in his own way.
4. The interpersonal context, where the child is made aware of affective states - his own and those of others.

Bernstein suggests that if these four contexts are used mainly of restricted speech varieties, one can postulate that the deep structure of the communication is a restricted code. In the same way these four contexts could be used of elaborated speech varieties, and Bernstein then postulates that the deep structure of the communication is an elaborated code. Bernstein's distinction between a semantic and a syntactic definition is not quite clear. In his texts he constantly switches between semantic and syntactic aspects.

1.3.4 Critical review of Bernstein's concepts of code

Bernstein's concepts of code have been criticized by several scholars among others by Rosen (1972), Loman (1974) and Coulthard (1969). Common to their criticism is that they all consider these two separate codes to be based on a simplified methodological definition. Coulthard expresses the opinion that Bernstein has greatly simplified the codes, as he defines the concept of code in both sociological, linguistic and psychological terms. Coulthard also thinks that the theory has evolved to the extent of becoming an artefact and that it is not applicable to real speech situations.

The most essential objection is, according to Coulthard, that the theory does not provide any guiding principles concerning how to help children with a restricted code. To be able to do something with the linguistically handicapped child, one must be able to point out the differences between actual and potential linguistic ability.

Harold Rosen is the social scientist who has launched the most severe criticism of Bernstein's concept of code. He did this in a so-called Oxford paper in 1972. Rosen maintains that the right-wing as well as left-wing parties could use Bernstein's research as a weapon in the political debate. The theory could be used politically because it is artificial and lacks substance, according to Rosen. Its most conspicuous shortcoming is that Bernstein does not investigate the social class system. He simply uses two class concepts, "the working class" and "the middle class". (Bernstein reports in 1971 that the so-called "unskilled working class" amounts to 29 per cent of the total population.) Bernstein does not try to look into the ethnic origins of these classes, nor into their levels of organizations, etc. His definition of the concept of the middle class is, according to Rosen, as weak as his definition of the concept of the working class. To be able to analyse the relationship between class and language, Rosen says, it is necessary to study the relationship between the culture of the oppressors in society and the culture of the oppressed. In an appendix Rosen gives several quotations in order to refute different statements in Bernstein's theory. Rosen wants, with these examples, to prove that Bernstein's theses are nothing but artefacts.

1.3.5 Résumé of Bernstein's concepts of code.

A. Bernstein's concepts of code have proved very useful in the analysis of linguistic behaviour when investigating relations to social reality. The applicability of the codes in the study of linguistic behaviour and their possibilities of being generalized have been emphasized by among others Robinson (1972) and Halliday (1971). The advantages of Bernstein's theory of codes can thus be summarized as in the points below:

1. The concepts of code can be directly related to the concepts of competence and performance in generative grammar.
2. The concepts of code enable us to expand and isolate the contents of social contexts.
3. Bernstein's theory of codes has brought about a more fertile discussion of the issue of the languages of different classes.
4. The codes being focused on role relations has led to more research concerning family relations and patterns of speech communication.

B. Bernstein's theory of codes has been critized for being imprecise and for being based on unwarranted assumptions. The critical viewpoints could be summarized as follows:

1. Bernstein has never defined the concept of social class.
2. Bernstein's codes are, due to their various sub-systems so intricate that they are inapplicable, they become artefacts.
3. Bernstein makes no clear distinction between syntactic and lexical variants of the codes.
4. Bernstein's investigations show methodological shortcomings.

C. Bernstein's theory of linguistic codes has been worked out in England, where social classes are more distinct than in Sweden. As the codes differ mainly in syntactic respects, which is to be expected in regard to English, they will not be particularly useful in analysis of speech varieties in the Swedish language. The object of Bernstein's theory is to provide opportunities for different types of linguistic training to eliminate the differences which are due to social class affiliation. This is also Bernstein's strong point. Later in this chapter I intend to discuss so-called compensatory programmes, but even now I want to emphasize that a Swedish development of Bernstein's theory will probably, to a greater extent, take into consideration speech varieties related to such factors as education, personality traits, etc rather than those related to the concepts of social class.

The wider the differences between the classes in a society, the greater the validity of Bernstein's theory. In the English society, where Bernstein studied these different linguistic codes, there is a very wide gap between classes, and class and linguistic codes are clearly related to each other. It is doubtful whether corresponding class distinctions exist in Sweden. Bernstein's definitions of working class and middle class are vague, but supposedly they concern educational as well as economic criteria. International comparative studies concerning the distribution of income and education show that, compared with England, Sweden has attained a higher degree of education as well as a higher economic equality. This helps to explain the author's own hesitation when it comes to applying Bernstein's theory to Swedish language usage.

1.4 Language differences and social background

Since in the 1930's researchers in Education, Sociology and Linguistics have tried to throw light on the relationship between so-called social background and linguistic ability. The list of names of all the scholars who have been concerned with this problem would be long. As examples of previous research with a sociolinguistic approach I would in this context only like to mention names like Vernon, Eysenck and McCarthy. In Sweden the relationship between, on one hand social background, and on the other hand different achievement factors has been studied by among others Husén (1969), Härnqvist (1966), Marklund and Paulin (1968) and A Svensson (1971). In spite of various attempts to specify the sociolinguistic approach, made by Bernstein (1969, 1971), Fishman (1970, 1972) and Labov (1972), it is still,on the whole, rather inadequate in respect of systematization and construction of theories. Gregersen (1974) for example declares that sociolinguistics does not possess any generally accepted theory and that its accumulated results are, for the most part,untenable because of methodological shortcomings. Gregersen says that as the nature of the concept of social background or social space is difficult to understand, this implies that sociolinguistic results are often based on conclusions made by the scholars themselves and thus cannot be bought whole-sale. When sociolinguistics has tried to clarify the relationship between linguistic ability and social background, the results have often been descriptive, i. e.one has analysed the social characteristics of a given individual or group of individuals, characteristics such as education, income, occupation and certain linguistic ones. In general the results have also revealed that there is a positive relationship between the background variables one has isolated and the linguistic ones.

In order to extend the meaning of the concept of social background, Wiederhold (1971) suggests that one may very well divide the social background into three different parts: 1) The socio-economic one, 2) the socio-cultural one and 3) the socio-ecological one. The concept of social background will need a closer examination, no matter what division one prefers to use.

1.4.1 Social class and groups in society

The distinction mentioned above assumes that the three categories depend on social stratification. What, then, is social class? In Sweden we have used a three-step social class system since 40 years. However, the concept of social class is not a unitary one. Classes found when a population is divided into social classes on the bases of socio-economic criteria do not necessarily coincide with those existing in society itself, although there is a close connection. The Swedish social class system is based on two criteria: Education and economic factors. In the empirical part of this thesis, where the author tries to throw light on different social factors, "social class" defined in this way will be used among other factors.

The concept of social class is based on the assumption that different social classes have different positions of power. Israel (1973) is of the opinion that productive forces and productive relationships together constitute the productive system of a given society and that this productive system determines the class structure. The term social class is emotionally and politically charged. For this reason the term social class is avoided in Scandinavian literature. Instead one talks about social stratification or uses other forms of euphemisms.

There are extremely few sociolinguists, with the possible exception of Harold Rosen (1972), who have made an effort to analyse the meaning of the concept "social class". Most frequently one accepts a class division which might consist of artefacts. There is not much point in stating that linguistic habits in lower social classes are poorer, that children from a lower social class have a more restricted vocabulary and use less complicated sentences, unless one has tried to explain the meaning of social class.

1.4.2 Division of background variables

On the basis of Wiederholt's division (See p.30), social background can be subdivided as follows:

A. Socio-economic relationships
   i. income, individually and in relation to the total level of income
   ii. education, one's own and one's opportunities of getting education
   iii. the relationship between education and income

B. Socio-cultural relationships
   i. access to education
   ii. access to cultural activities
   iii. the individual's opportunity to participate

C. Socio-ecological relationships
   i. political opportunities of social class mobility
   ii. democracy in places of work; industrial democracy
   iii. family relationships

The division above constitutes an example of possible subareas which may be of value in a sociolinguistic description. It includes categories which can hardly be determined by quantitative data. The trivial and nevertheless real fact is that we may be able to describe the surface layer of the social field, e.g. variables such as education, income, number of concerts etc but that we have great difficulties making an analysis of the importance of subtle variables, e.g. access to cultural activities and family relationships.

Most sociolinguistic studies e.g. those by Fishman (1970), Ervin Tripp (1971) and Bernstein (1969, 1971, 1973) consider social background to be an independent variable and the linguistic mode of expression to be a dependent one. This division may seem obvious but because of the complicated patterns of interaction between language and social environment, the use of the concepts of independent and dependent for social background and language, respectively, might be submitted to a critical examination. Theoretically, it is conceivable that social background and linguistic ability alternate as independent and dependent variables.

An essential problem to future sociolinguistics will probably be to try to get increased our knowledge of how linguistic ability is affected by the environment and how it, in return, influences this.

1.4.3 Diglossia and social affiliation

To describe the various ways of functioning of a language, Ferguson (1959) introduced the term "diglossia". Originally this term signified the relationship between a given society on one hand and the languages or dialects in this society on the other. Fishman (1972) and Sandlund (1972) have specified and exemplified this term. Both Fishman and Sandlund use the term diglossia in connection with descriptions of bilingualism. Diglossia occurs in bilingual societies if two existing languages serve different purposes. Diglossia may also appear within one and the same language, e.g. in the shape of standard language and regional dialect, "Standard English" and "Non-Standard English" respectively.

On the basis of the preceding arguments it is possible to divide a language into standard and non-standard language. Standard language would thus be used by well-educated and trained individuals, whereas non-standard language would be spoken by uneducated people using simple communication sentences (cf. Bernstein's polarized theory of codes). In standard language as well as in non-standard language, diglossia may or may not occur. The four possible outcomes appear from the list below:

A. Standard language without diglossia (SO)

B. Standard language with diglossia (SD)

C. Non-standard language without diglossia (NO)

D. Non-standard language with diglossia (ND)

The four cases may be described as follows:

SD signifies standard language in the case when individuals with a good education and a high social status use the standard language but at the same time get an opportunity to speak the non-standard language, in other words they use two functional varieties of their own language.

ND signifies the non-standard language (due to short education, lower social status etc), when there does exist an opportunity to use the standard language in certain functions.

SO signifies the standard language without diglossia, i. e. the same language as SD but lacking an opportunity to use the non-standard language in certain functions.

NO finally signifies the non-standard language without diglossia.

According to Bernstein's definitions, SD and SO denote the elaborated code while ND and NO denote the restricted one. The concept of diglossia, however, sheds new light on the concept of code.

Theoretically we may conceive of patterns of communication like the ones reproduced in the diagram below:

	Standard language	Non-standard language
	S	N
Diglossia D	SD	ND
No diglossia O	SO	NO

Figure 1.1 *Patterns of Communication and Diglossia*

The above figure contains a hierarchy where SD constitutes one pole and NO the other. An individual who belongs to the Standard Diglossia group has thus access to all existing alternatives regarding linguistic change of function.

It is hard to imagine a society without any diglossia whatsoever. Fishman (1972) believes that societies without diglossia may exist if they are extremely small or isolated and undifferentiated. In my model the concept of diglossia has been simplified. This does not imply that I believe that SO means a total lack of functional variation. SO an NO in the model involve less opportunities for change of function.

An important sociolinguistic issue is the change of the structure of diglossia from the preschool age up to adolescence. Not only the change of structure is interesting but another important matter is whether standard and non-standard language without diglossia may be converted into language with diglossia.

The advantage of describing language development by means of diglossia is that the change of functions will probably be considered extremely important. A person who can speak only the standard language has very limited means of communication with those who speak the non-standard language particularly the non-standard language without diglossia. In our way of reasoning diglossia is viewed as a phenomenon typical of Swedish. Other types of diglossia will occur if one, as a Swede, meets with another culture, even if he has command of the language spoken but does not master its ways of functioning.

1.5 School and language

Can schooling affect the language development to the extent that it evens out language disabilities caused by the children's social background and everything that goes with this? Israel (1973, p. 213) has summed up the problem in the following sentences:

> Suppose now that circumstances are such as these investigations claim (This refers to Bernstein's studies), namely that working class children use a restricted code, while middle-class children have a more elaborated code, and also that the restricted code forms an obstacle, e.g. to success at school. Does this imply that we ought to teach school children a more elaborated code, i. e. a way to express themselves which is prevalent in the middle-class? In other words, should the school try to turn working class children into middle-class children?

From Israel's attitude the result would be that gulfs were created between the children and their social environment. It is not obvious either, that the development of the school system should be based on middle-class values.

Israel (1973) also maintains that the children who come from a social environment which resembles that of school not only have an advantage when starting school over children from an environment which differs from that of school, but they have also greater chances to succeed because of the linguistic environment which favours them. For that reason Israel believes that the school acts as a causal agent of social inequalities. And the different linguistic codes form an important instrument in causing this.

Israel's reasoning cannot, at present, be supported by research results from Sweden. But the lack of correspondence with regard to social class affiliation between teachers and students may affect the development of linguistic codes. The general goals of the school system as worded in the official curricula of Sweden are to diminish differences caused by various social factors. This over-all, basic ideology is found in the educational curricula of most countries. But there remains the fact that most teachers come from a pronounced middle-class environment. In a study by Marklund and Erasmie (1974) attention is called to the fact that science student teachers trained at the beginning of the 70's, are recruited mainly from social class II, i.e. from the lower middle-class. The same is the case, though to a less pronounced degree with primary school trainees. (See the table 1.1.)

Table 1.1 *The Social Origin of Future Subject Matter Teachers and Class Teachers in the Lower and Intermediate Stages of the Comprehensive School*

Category	Social group in percentage		
	I	II	III
Subject matter teachers[a)]	15	58	27
Class teachers, intermediate stage[b)]	19	36	45
Class teachers, lower stage[b)]	21	35	43
twenty-year-olds, 1968	11	39	50

a) Science teacher trainees, 1971-72

b) Class teacher trainees, 1969

(From Erasmie and Marklund, 1974, p. 71)

The teachers who have received their training in 1970 and onwards will be active teachers into the twenty-first century. Their attitudes and values will influence their teaching. The teachers were recruited from the middle-class and therefore it is very likely that the values and attitudes of the middle-class will set a standard for a long time ahead.

The sociolinguistic problem can be formulated as follows: If, through education and thanks to their social origin, the teachers have acquired norms for what is considered "good" language and values reflecting themselves in their language and if at the same time the majority of their students come from environments accepting other values and using other linguistic modes of expression for describing emotions, attitudes etc., what is then going to happen?

The teachers probably have the ambition of transferring their language habits and their norms to their pupils. This ambition is based upon the belief that their own linguistic habits are qualitatively superior to those of their students. When this transfer takes place the teacher will notice that certain students have deviating linguistic habits, i.e. linguistic habits which differ markedly from their own habits. The teachers will also find that certain students, namely those coming from the same environment as the teachers themselves, easily understand the modes of expressions used by the latter. It would not be too bold to state that teachers in such a case would be likely to favour the students who use a linguistic code which is familiar to and accepted by them. This would result in a deeper gulf between the linguistic codes. The phenomenon of the self-fulfilling prophecy has been clarified by means of several studies. I want to refer to the best-known one, namely 'Pygmalion in the class-room' (Rosenthal & Jacobson, 1968).

Even if we assume that teachers are aware of the social background of their students and that they deliberately strive for equality, i.e. an equality which involves the elimination of language differences, school still has exceedingly small chances of exerting an influence, according to the studies carried out. The experiments made with so-called remedial teaching have in general yielded rather disappointing results. (See below in this chapter.)

The problem is a complicated one for the following reasons. On one hand it is important for the children to acquire a language which enables them to make use of the surrounding culture and to be active citizens who are able to influence their society. If the language required for this purpose is equivalent with a middle-class language or an upper-class language, then this is the language wished for.

If, on the other hand, we do not approve of the traditional values implying that the cultural and linguistic environment of the middle-class would in some way or other be of greater value or more efficient than the languages of other classes, then the measures taken must be different. Israel (1973) finds that profound changes of the social and economic structure of society are required to obtain linguistic equality. In other words, it is not only the task of school to solve the problem of equality but a problem to society as a whole.

1.6 Explanations and measures

1.6.1 The cumulative deficit

The concept of cumulative deficit has obtained a somewhat different meaning among different social scientists. By this concept Bernstein (1961) denotes negative effect connected with social class affiliation, i.e. children from the working class will be inhibited in their development because of their use of a restricted and converging linguistic code. The concept of cumulative deficit is used by Bernstein in approximately the same sense as Jonsson (1970) uses the concept of negative social heritage. In his interpretation Bernstein assumes two linguistic codes which are in their turn dependent on class affiliation. Martin Deutsch (1965), Gregersen and others (1975) believe that the influence of the school has a negative effect upon children who come from a so-called poor environment or belong to minority groups. When they leave school they are therefore comparatively still worse off when it comes to solving intellectual and linguistic problems than they were when beginning.

Irrespective of minor variations in the interpretation of the concept of cumulative deficit the basic view remains that language might be expressed in a good or bad way. If language is expressed badly, there is evidently something lacking which should be considered valuable. Deutsch's viewpoint is educationally justified with respect to the claims he believes he would encounter in the present and future societies. He maintains that if e.g. someone wants to become a computer expert, he must be able to read instructions and understand symbols and concepts. In order to manage this, he must have developed a more elaborated linguistic pattern. Deutsch's conclusion is that language should be developed at school in compliance with the rules of the elaborated linguistic code.

Deutsch's conclusion has been criticized by Hager, Haberland & Paris (in Gregersen and others, 1975). These critics mean that the belief in a middle-class language, the elaborated linguistic code, being superior to the restricted code of the working class is nothing but a myth. They maintain that the view underlying the evaluations of the linguistic codes is connected with the fact that the research workers have mainly belonged to the middle- or the upper-class, i.e. they have themselves used a linguistic code which they consider superior. They refer in this context to Labov's studies of "non-standard English" (Labov, 1972) and maintain that sentences which would be considered incomprehensible by people in the middle-class would, in fact, seem clearly logical and understandable to working class people. Hager, Haberland & Paris say that the prejudice in favour of considering certain linguistic forms restrictive is closely linked to the narrow conception of language of the middle-class, and that they see the cause of social inequality in the use of linguistic forms unfamiliar to their own language usage. The division into linguistic codes thus becomes the excuse of the middle-class for not having introduced educational equality (Hager, Haberland & Paris in Gregersen and others, 1975, p. 221-245).

If one assumes that the cumulative deficit is a fact, there are in principle two possible solutions. One involves the attempt to eliminate the effects of a so-called "poor" environment, inadequate education and insufficient stimulation etc by means of measures of support such as compensatory programmes. The other possibility available is trying to alter the contents of education in a long perspective in order to better adjust education to the majority of the pupils going to school. This latter alternative has been the goal for Swedish school policy since the comprehensive school was introduced. In spite of these benevolent intentions, the hypothesis of the cumulative deficit is valid in our country too. Even if Sweden is not a typical class society like England and the U.S., linguistic forms develop at school in a way due to class affiliation. As the majority of Sweden's teachers come from the middle-class, it is very likely that the values and linguistic forms of the middle-class are crucial for the acquisition of language in school.

Vernon has also criticized the studies, in particular those which have been carried out in the U.S., where one has tried to establish relationships between, on one hand, achievement and, on the other, different background variables. According to Vernon, the reliability is low. Vernon indicates that the reasons for the differences in achievement between children from different social groups might very well be due to the expectations of teachers and parents.

> "But as some critics are beginning to realize, the whole conception of underachievement is pretty shaky, does it not arise more from unrealistic expectations among teachers and parents than from personal shortcomings in the pupil or student? Some children do not satisfy their parents because the parents are projecting their own

> aspirations rather than considering the child's interest; and many do not satisfy their teachers because the school has failed to stimulate them or has taught them badly; or they prefer the peer culture to adult values."
>
> (Vernon, 1972, p. 28)

1.6.2 Compensatory teaching

The concept of remedial teaching came first to be used in the U.S. where by different measures of support in the so-called fight against poverty they tried to compensate a "poor" environment. Bernstein, in a paper (1972), has severely criticized compensatory teaching. As it has functioned so far, Bernstein says, it diverts the attention from the shortcomings of the school itself and focuses it instead on defects in the family and in the child. Bernstein's arguments are based on the following facts: If we arrive at the conclusion that a child is unable to benefit from school, we act on the assumption that school must make up for what is lacking in the family. As the family does not have any possibilities to give their children education, training, influence etc, we coin the terms "culturally deprived" and "verbally handicapped". If we call a child socially or culturally deprived, the conclusion drawn would, according to Bernstein, be that the parents are inadequate. Thus the school must in some way or other make up for the incompetence of the parents. This entails, says Bernstein, that wedges are brought in between the child and its original environment. In Bernstein's opinion this point of view is most unfortunate and we should instead look into the classroom situation and its prerequisites and various contexts.

> The term cultural deprivation is not a generally accepted term. A condition for being able to use the term is that one has a point of reference. In American studies the norms of the public schools have been taken as such a

> point of reference (Bereiter and Engelman, 1966). In Swedish debate this term will probably be used as a synonym for culturally deprived.

Gregersen (1975) agrees with Bernstein in his criticism and quotes Labov and Baratz who in place of the theory of deprivation have expounded a theory of differences. According to this theory the school is lacking in something, and this something is the ability to accept the children from the slum districts. The essential part of the theory of differences lies in the acknowledgement of various class cultures and that these cultures cannot be compared on a scale of values ranging from good to bad. The theory of differences has not yet, to any greater extent, been stated in concrete terms and therefore criticism like that made by Squibb (1975) may have a certain validity, not only for the American educational system, against which it is directed but also for our own school system.

The theory of differences, put into practice in accordance with its theoretical premises, will result in a confirmation of value systems preventing people from lower classes from being successful. The theory of differences accepts the various cultural patterns and declares that all patterns are equally valuable. This sophisticated version of "Uncle Tom philosophy" may be used directly by reactionary forces to prevent the underprivileged from obtaining education and through this from gaining increased knowledge.

1.6.3 Alternatives to compensatory teaching

What alternatives exist to the type of compensatory teaching used so far? On the basis of Freire's and Illich's ideas about education, several alternative solutions can be found. Instead of forcing one class culture upon another, it would be better, according to Freire (1972) to "conscientize" i.e. to make the individuals aware of their own culture so as to make them develop it themselves. Freire provides examples from his own activity among oppressed people in Latin America illustrating how this may happen in reality. In what way Freire's educational philosophy might be of use in Sweden has not yet been expressed in explicit terms.

Like Freire, Illich (1972) stresses the importance of making the individual conscious of his own reality and of providing him with the possibility to develop this.

This form of education differs markedly from the one based on a behaviouristic view which has prevailed in school for a long time, especially in respect of programmes of linguistic training. According to the behaviouristic tradition it is a matter of establishing knowledge of the human being as an object. On the basis of this knowledge one should look for a general theory. To the behaviourists verbal acts are in principle interpretable in the same way as all other acts.

Rommetveit (1972) criticizes the behaviouristic psychology of language and maintains that it cannot provide us with explanations of how lingusitic communication works, because of its restricted set of concepts. According to Rommetveit behaviourists want to explain different linguistic phenomena like thoughts, meanings and messages between people etc in terms of functions and mechanisms of a biological organism in interaction with outward stimuli free from meaning.

As behaviouristic psychology of language has been predominant in the United States, it is not surprising to find that remedial programmes of linguistic training have been worked out there. Now when we learn that the behaviouristic approach has not yielded any noticeable results, experiments ought to be made using other theoretical approaches, and then it is also advisable to try out new and unconventional strategies, e.g. those which Freire recommends.

Examples of criticism levelled at compensatory teaching based on behaviouristic theory are found in papers by Bernstein (1971), Deutsch (1965) and Gregersen (1974).

1.7 Choice of variables

If it is hard to analyse the substance of social background the problems magnify when it comes to defining what is actually meant by language development in general terms. One has tried to divide language development into a number of different units in the same way as when one works on social variables. In principle, we may conceive of an infinite number of linguistic variables. The essential thing to us is to try to answer the following question: What linguistic variables are relevant for illustrating the relationship between language development and social environment? In most Swedish studies reporting on the relationships between achievement variables and social background, the linguistic variables have been represented by vocabulary tests. In a few cases the battery of linguistic tests has been more extensive, including e.g. so-called Cloze procedure tests, tests of verbal comprehension and test of word fluency. In certain Swedish studies one has tried to analyse the syntax of language and relate this to various types of background variables. Examples of this are found in the projects "Talsyntax och skrivsyntax" (Syntax of Speech and Syntax of Writing)(Hultman, 1973) and FRIS (Information about school research, 1973). Carin Holmlund has, in her doctoral thesis (1974), emphasized the relationship between syntax of speech and social background.

In these three studies the researchers analysed the syntax by means of a method of analysis of sentence construction worked by Loman and Jörgensen (1971) and Teleman (1974).

The selection of linguistic variables has been criticized by, among others, Gregersen (1975). As an example of poor ones, Gregersen has pointed to those in a study by the German sociologist Oevermann (1972).

1.7.1 Quality, quantity and context

What linguistic variables are particularly relevant to the elucidation of language in a proper way? There is no unequivocal answer to this question, but I will list a few different approaches below. The most straight-forward group of linguistic variables are the quantitative ones, that is the number of uttered words. Quantitative variables correspond to the factor of intelligence called "Word Fluency". Are such fluency factors relevant for the description of language development? The answer cannot be a clear yes or no. A fluency factor is always correlated moderately or strongly with other linguistic variables. Quantity alone is probably not a very adequate measure of linguistic ability. In previous studies carried out by, among others, Vernon (1972) it has been pointed out that the fluency factor is not very important. Criticism of descriptions in terms of quantitative factors is due to the view that the number of words uttered is connected with sheer mechanical skill. Such descriptions would thus be more mechanistic and less essential ones. Quantity is related to the individual's performance, however. Quantitative linguistic variables often correlate highly with linguistic variables of quality, e. g. essays. The longer the paper, the higher the mark (e. g. "Syntax of writing", 1972).

The linguistic variables of quality have been based on studies of vocabulary and analyses of syntax. In particular the research on sentence construction has meant a great deal to the possibility of obtaining an over-all impression of the linguistic representation. In the method of analysis of sentence construction worked out by Teleman (1974), there is a system for describing written and oral statements. Teleman's method, which has been applied to linguistic data derived from one age group in my investigation of 1972, will be described in more detail further on in this thesis.

Irrespective of the choice of quantitative or qualitative variables, the most essential question, however, concerns what context we should choose to record. Measurements of linguistic behaviour mostly take place at given points of time, and the subjects of the experiment are tested with various language tests. The linguistic behaviour will here be tied to the tests presented, and the results will not yield a complete picture of it. The problem is almost unsolvable. In order to get an idea of linguistic ability one should follow a number of subjects for a long period of time and record all the signs connected with their verbal communication. In some cases one has tried to make such recordings. Piaget (1926) made trained stenographers follow two preschool boys. Everything that they uttered was taken down and analysed. Experimental recordings have, similarly, been tried out in Sweden by Söderberg (1971). In this case the recordings concerned the development of language during the first yearsof living.

To what extent, can the results obtained be generalized? I would here like to refer to criticisms, presented above and summarized by Gregersen (1975). He was of the opinion that sociolinguistics does not have any generally accepted theory. I agree with him on this, but it seems to me that the reason for this lies in the fact that language development takes different courses in different speech areas, i.e language has different meanings. Living conditions and ways of life in a given society affect language, and this makes it impossible to compare the linguistic modes of expressions of two different countries.

Chomsky's generative theory (1957 and 1965) provides an example of a theory which allows for generalization. His descriptions of deep and surface structures of language have general validity irrespective of speech area, according to most linguists. His concepts of competence, which refers to innate ability i.e.capacity, and "performance", which has to do with the actual use of language, both have general meanings, applicable in various cultures.

A theory which cannot be generalized is Bernstein's (1971) theory of linguistic codes. This theory is a result of studies within a very well-defined area in London. Nor do Fishman's studies (1970, 1972) of language behaviour of different minority groups in the U.S. possess any degree of generalizability.

For this reason it is hard to formulate an over-all sociolinguistic theory. If we consider the sociolinguistic approach as a complex hierarchical pattern, we may possibly venture to assert that the top part of this structure may be made generalizable. This statement is of little interest, because it leads to among others the following conclusions: the languages of various social classes differ, well-educated individuals have superior language, children whose parents have a high income will get a language of superior quality and use a more extensive vocabulary compared to children whose parents earn little money etc. This type of descriptions is of little interest, but we may admit that in this case one can generalize to a certain extent. If, however, we go further down in the sociolinguistic hierarchy for the purpose of determining characteristic traits, both for dependent and independent variables, there are few possibilities to generalize i.e. to construct a theory with a high degree of universality.

Sociolinguistic science is nevertheless interesting. It should be a matter of vital importance for every society to try to throw light upon what governing factors (e.g. education, income, division of power, form of government) influence the language in this very society. If we want to achieve any kind of linguistic equality, sociolinguistic research results might provide a foundation on which we might build. But this foundation, quoted above, is not general but specific for the very speech area, country, region or city in which the sociolinguist has been working.

1.8 Concluding remarks

Sociolinguistics has mainly been a descriptive science. It has tried to find out to what extent school, social class etc are of importance for the linguistic modes of expression. One has, in too limited an extent, tried to analyse causes and rarely proceeded to suggesting measures of support, necessitated by the results obtained. The only sociolinguist who has followed up his studies with a theoretical action model is Basil Bernstein. He and his followers have therefore influenced all sociolinguistic research after 1960. Their research suffers, however, from a series of shortcomings, to which I have pointed in this chapter. The concept of code is not sufficiently analysed, nor has Bernstein endeavoured to explore what is meant by social class.

The interest in sociolinguistic research has increased in recent years, not least in the Scandinavian countries. In Denmark sociolinguistic debate is carried on, in the first place, by Gregersen (1974, 1975) and Vejleskov (1972, 1975). In Norway sociolinguistics has been introduced mainly by Rommetveit (1972). In Sweden the interest in sociolinguistics has been less pronounced than in the other Scandinavian countries. Bengt Loman (1972 and 1974) has introduced sociolinguistic theory in Sweden. By introducing the research initiated by Bernstein, he has, above all, conveyed sociolinguistic theory to a larger group of clients. Hultman (1974), Teleman (1974) and Holmlund (1974) have also in their research, provided important contributions.

Chapter 2

FACTORS INFLUENCING THE DEVELOPMENT OF LANGUAGE

2.1 Introduction

Sociolinguistics tries to explore factors influencing linguistic modes of expression. As stressed in chapter 1, nobody has so far been able to present a general theory.

Language is influenced by a variety of governing factors. If we knew these we would be able to predict the development of language. By means of the sociolinguistic results available, in particular those found by Bernstein and Fishman, we can point to forces which obviously exert an influence on language, like social class which implicates a linguistic code, typical of class, educational variables and demographic factors.

The sociolinguistic approach proceeds from the idea of the significance of social factors viewed in relation to biological heritage. In this chapter we will look into different theories of language development and of factors influencing this.

Russian linguistic research is well established and can boast of names like Vygotsky and Luria. Particular linguistic pedagogics has evolved with the purpose of making optimal progress in linguistic development during the child's different stages of development. In this chapter I have devoted a fairly great deal of my attention to Russian linguistic education. The section under the heading of "The Russian school" aims at giving a picture of ideas in the field of linguistic pedagogics prevailing in Russia at present. These ideas seem to be fairly homogeneous.

Furthermore Piaget's theory of developmental psychology has a bearing on linguistic development. In two sections the behaviouristic and the mentalistic views of the development of language will be discussed.

The chapter is closed with a discussion about the relationship between sociolinguistics and the various linguistic theories.

2.2 The Russian school

Not only do Russian scholars think that language can further the cognitive development of the child, but they also maintain that the language is a prerequisite of the child's mental growth. Consequently language is not developed by any inner force but rather as a result of the child's relations to the surrounding world. The relationship between mind and matter has been underlined by, among others, Kamienski (1973) who quotes Ivanin (1972).

> "Man's psyche is no specific substance or independent phenomenon. Intrinsically the psyche is a product of matter, the ideational quality of the human brain. This is maintained by Marxist classics, according to whom there does not exist any mental reality as such. Man is reality, and he has one unique quality - the mind. General opinions, values, delusions, etc. arise in real individuals. In reality there does not exist any 'common' brain with the capacity of thinking and feeling. Only after common thoughts and experiences have been detached from their carriers, by being displayed in material objects (books, newspapers, radio etc.) do they obtain comparative independence, and their repercussions are possible only if they have an effect on individuals who are real entities."

The individual is moulded by his own relations to the surrounding world. This has been emphasized by Lichatjov (1968) in Kamienski (1973).

> "Soviet education starts from the Marxist principle that man is a social being and his behaviour determined by the structure of social relations. In the course of life and social activities and by the means of a revolutionary break with obsolete social conditions, man's new consciousness and behaviour will come into being."

Luria and Vygotsky are those among the Soviet scientists who have formulated the most important Russian theories of language acquisition. Their starting-point is the one mentioned above: "Man is a social being who only develops through his relations with the surrounding world".

2.2.1 Applied linguistic pedagogics

The Soviet educator Markova has in a paper (quoted in Gregersen, F., et al., 1975) specified and summed up the views of Soviet education on the linguistic development of the child. I am therefore going to follow Markova's presentation and closely examine the ideas which pertain to the relationship between language and society. Like Piaget, Soviet education makes use of a division into developmental stages. Markova cites the following general principles in order to be able to perform a developmental analysis of language:

1. For each period of age regard is paid to the characteristics of the preceding stage, to the distinctive features of the given age and to the new qualities which may appear. Attention is also paid to what comes in the subsequent developmental stage.
2. The mental characteristics of the child in each period of age are non-static. Every age has got a reserve of energy for the purpose of mental development which can be mobilized whenever the child's activity has been organized in relation to the surrounding world or to its own behaviour.

3. The mental development of each age is determined by a so-called major activity. The transition from one age to another is determined by a change in this. The major activity in its turn bears a close relation to the formation of personality.

Markova states two forms of major activity:

a. An activity when the child among the "things" creates strategies for using these "things" in the surrounding world
b. An activity when the child among other people aquires experience of social relations.

The purpose of this dissertation is to try to shed light on the linguistic development in relation to governing social factors from the preschool age up to adolescence. Therefore, I am going to follow Markova's presentation more closely with respect to the characteristics of these periods.

Preschool age is characterized by a development of language in which the regulating and planning function of language are the primary ones. Markova bases herself in particular on Vygotsky's theory of language development in the preschool years. Vygotsky means that the child's social language is developed during the period from four to seven years of age. Vygotsky discusses the development of egocentric and communicative speech. As opposed to Piaget, and unlike American research on linguistic development, too, Vygotsky maintains that egocentric and communicative speech are social to the same extent but in different ways. According to him, egocentric speech is gradually developed into a kind of inner tool or inner speech, which will play an essential part in the formation of the cognitive structures determining human behaviour.

In a well-known polemic Piaget and Vygotsky have discussed the egocentric speech in the child. Vygotsky does not, like Piaget, consider the young child as autistic and the deve-

> lopment as an enforced socialization. Piaget maintains that the child is naturally egocentric during the first few years of its life. Vejleskov et al (1975) point out that the dispute between Vygotsky and Piaget in many respects originated in misconceptions. They simply had not read each other's works.

Markova (1973) maintains that the analysis of egocentric speech also explains the inter-relationship between linguistic fusion and linguistic form. For, she says:

> "The more often egocentric speech appears in its special function, the simpler and the more predictable does its special syntax seem to be." (After Markova, 1973, quoted in Gregersen et al , 1975).

Markova asserts that during the preschool age monological speech arises, i.e. the speech which is connected with a complicated thought or an idea. Monological speech is thus accordingly a predecessor of contextual speech. At the same time as the development of monological speech takes place dialogical speech occurs. Towards the end of the preschool age (according to Russian terminology the preschool period goes from three to seven years of age) the monologue and the dialogue will be used alternately. This implies that the preschool child uses its language in a differentiated way. Language will be dependent on the situation causing a given utterance.

The school years

According to Vygotsky, Markova and other Russian educators of language the generalizing function of language will begin to develop in the first school years. Beside this generalizing function the communicative function of language will also be accentuated. This takes place at the very beginning of the school age or possibly just before, i.e. around the age of seven. According to Markova (1973), a rapid development of the governing function of language sets in. This function may concern the potential of influencing the activities of other people in those collective activities which are typical of the school years (Markova here refers to the work of the Pioneer- and Komsomol-groups). Furthermore, new aspects turn up concerning the governing of one's own behaviour. The function of self regulation will become more and more complex since language becomes increasingly important in the establishment of social relations. Markova gives the following general characteristics of the functions of the school years:

> "The differentiation of actual communicative speech or egocentric speech, which Vygotsky located to the end of the preschool age, involves an intricate interaction of these functions during the school age. Consequently the functions of inner speech will become more specialized. This is due to the communicative meaning of language. The functions of communicative speech will become more and more intellectualized and will transmit the personal, individual's inner world. They will develop into differentiated individual functions of influence." (After Markova, 1973, in Gregersen, 1975, p. 62-63).

Markova maintains that the school child endeavours to grasp the functioning of language while the preschool child tries to become aware of its form. The former takes place through the development of a variety of qualitatively new processes. For this development to take place, perfection of previously acquired linguistic forms is required.

An interesting point of view presented by Markova concerns the differences in the linguistic development between the preschool years and the school years. Markova says:

> "If one compares the rate of development of preschool children and school children with respect to the development of language the results will be paradoxical. In the school years the linguistic development seems to slow down although it has by no means been finished. Apparently current language teaching does not mobilize the language potential of the child. One fails to make use of the linguistic experience obtained during the preschool years. Studies made by Audarovois and Zhdans demonstrate that the

> youngest school children will make considerable progress with regard to semantic differentiation and transformatin within the relation between form and meaning (the morphological level of language) if a special organization of the instruction has been made. Our investigations have also shown that pupils at the middle level of school age are capable of understanding the relation between linguistic function and linguistic form." (After Markova, 1973, in Gregersen et al 1975. References which refer to the Russian scholars which have been quoted, Audarovois, Zhdan, Zhdek and Repken are missing in Markova's paper).

Markova's points of view on the importance of school for language development are pretty much in agreement with the points of view presented by Bernstein. Data confirming the hypothesis of slower development during the school years can also be received from the data presented in the empiric part of this thesis. I shall in the following render the development schemes published by Markova in her article (1973). I have chosen to present the stages relevant to the problems of my thesis.

Period	Forms of activity	Linguistic functions	Linguistic forms
Preschool years 3 - 7 years	play activities	Social contact (Regulated and differentiated influence). Self regulation, planning of simple actions	Dialogic-situational speech, Monologic-conceptual speech, forms of inner language
The early school years 7-10 years	learning activities	Generalizing (acquisition of meanings and pre-arrangement of these) Governing and differentiated influence in order to express oneself	Forms (phonemic structure, lexicon, syntactic) are developed by insight

Period	Forms of activity	Linguistic functions	Linguistic forms
The middle school years 10-15 years	learning activities	Goal-directed, self-regulation, governing and differentiated influence generalization	Linguistic means of functional style, individual linguistic style
The upper school years 15-17 years	instruction and occupational activities	Goal-directed self-regulation, generalization	The culture of oral and written language

(After Markova in Gregersen, 1973, p.67)

Markova's article has the aim of increasing our understanding of children's need of stimulation, in particular during the preschool and early school years. In her paper she discusses the dormant resources of the child - resources which remain unexploited because of defective teaching and learning. Markova's points of view are strikingly in accordance with the demands for social activities advocated by Hunt (1961). Hunt maintains that the development of language is inhibited by the norms of the pre-primary school. The potential of a preschool child is, according to Hunt, much greater than what most educational psychologists believe. Taking Markova's and Hunt's views into consideration, we might get an increased cognitive activity during the preschool years. This is a view which disagrees partly with traditional preschool education launched above all by Gesell and his followers. These believe that the development of the child (motor as well as cognitive) has to pass through successively higher sequences and that the individual has to pass through such a sequence in order to reach the next stage which is a higher one. According to the Gesell school the child would also mature during the preschool years, which implies that sheer learning must not occur. Russian education, as advocated by Markova, Luria and Vygotsky, maintains that an intensification of the social relations should lead to an increase in linguistic ability. There is also a striking resemblance between Russian education and Piaget's theory of language development.

2.3 Piaget's theory of language development

The English scholar Thomson (1963) finds that Piaget's theory is based on a genetic foundation. He states that Piaget starts from the assumption that higher mental functions grow out of biological mechanisms.

Even if his theory of the development of language and cognition has a genetic basis, Piaget builds it on the relation between maturation and development. Concerning the development of the intellectual operations Piaget says:

> "We may, thus, assume that the intellectual operations are manifestations of neurological processes of coordination, which are developed as functions of the organic maturation processes. In reality the maturation of the nervous system is not finished until the age of 15 or 16 years and consequently it seems obvious that this maturation process plays an indispensable role in the formation of mental structures, even though this role is very poorly explored. A necessary condition is not bound to be the only one; it is easy to show that maturation is not the only factor involved in the development of operations; the maturation of the nervous system confines itself to the opening up of possibilities which are excluded before certain ages, but these possibilities remain to be fulfilled and this is caused by other means, primarily the functional exercise linked with action."
>
> (Piaget, 1972, p. 48)

According to Piaget, linguistic development follows other aspects of the intellectual development. Piaget also considers the linguistic development as part of the development of intelligence (1968, 1973). Piaget regards intelligence as a form of adaptive behaviour. Adaptive behaviour is for Piaget a behaviour which furthers the individual's adaptation to the surrounding world. The adaptation progresses from the diffuse and spontaneous reflexes of the newborn child to logical and abstract thinking. According to Piaget, this proceeds in stages. The transition from one stage to another is a result of a complicated process of interaction. There are four major types of factors involved when an individual is about to proceed from one stage to another, and they will affect the rate of development. According to Lovell (1971) these factors are:

1. Biological factors determining the fixed sequence of the different stages. The biological factors affect the evolution but only as regards sequential order.
2. Factors connected with equilibration and selfregulation. For new patterns of behaviour or so-called schemata to develop it is necessary that the two complementary processes of assimilation and of accomodation are in a state of equilibrium.
3. General factors connected with socialization. With this Piaget denotes interactions arising among children and between children and adults. Lovell (1971) means that the factors of socializations operate to a smaller or greater extent in all cultures, and they are closely linked with factor 2 (the factor of equilibrium).
4. Factors related to educational and cultural transmission. These factors vary, of course, from society to society.

2.3.1 Piaget's developmental stages

Quite regardless of subgroups Piaget divides the intellectual development into the following stages:

The sensori-motor stage, about 0 - 2 years

The pre-operational stage, about 2 - 7 years. (Note. Piaget divides this stage into two main substages, the pre-conceptual stage, about 2 - 4 years, and the intuitive stage, about 4 - 7 years.)

The stage of concrete operations, about 7 - 12 years

The stage of formal operations, from about 12 years of age.

I will now more closely examine the two stages relevant to my dissertation, viz. the pre-operational stage and the stage of formal operations. My presentation is, to a large extent, based partly on Piaget, 1968, and partly on summaries and interpretations of Piaget's theory (Beard, 1970, Lovell, 1971, Bruner, 1971).

During the later period of the pre-operational stage, i e during the years from four to seven, the child develops its language to the extent that it begins to use words when thinking.

Symbols start to get a more general meaning than before. By developing the symbolic function, the child can differentiate between signifying and signified elements. During this period, language is still mainly egocentric, according to Piaget. This implies that speech is to a large extent assimilated. But during this period the process of accommodation increases through increased contact with the environment. What happens is, says Piaget, that the linguistic function during this period is developed into a profound transformation of thinking. According to Piaget(1968), this means that it is reasonable to assume that thinking precedes language. In this respect Piaget's theory is similar to Chomsky's generative theory, in which the development of deep structure precedes that of surface structure. The development of language towards a greater vocabulary, longer sentences and an increasing degree of complexity, according to Piaget, is tied up with the evolution of combinatorial operations, i. e. the capacity of combining elements, which together form logical entities. During the next stage, the stage of concrete operations, this combinatorial system will evolve further. According to Piaget this ability of combination is connected with social behaviour.

Children from four to seven years of age mainly use egocentric speech (Piaget, 1968). The following stage is distinguished by the adding of further development of the concepts and by the development of relations to the environment, i.e. the child detaches the concept from the particular object and uses it in an abstract way. (The symbolic function is developed.)

During the stage of formal operations the capacity of hypothetico-deductive thinking is developed. As to the teenager's adaptability to the social environment, Piaget finds that during the period of formal operations an intellectual form of "egocentricity" occurs. He says:

> "This form of egocentricity manifests itself in the belief of the omnipotence of thought; it is as if reality should subordinate itself to the systems and not the other way around. This is the metaphysical age par excellence. The ego is sufficiently strong to build its own universe and has sufficiently vast boarders to be able to incorporate this."
>
> (Piaget, 1968, p. 79)

However, thanks to formal thinking the teenagers will gradually become consistent with reality, says Piaget.

To reach the stage of formal operations it is, however, necessary that the influences, emanating from the previously cited factors, function in an optimal way. The problems which several teachers have experienced in the secondary school, e.g. when the students do not grasp instructions in textbooks or in other teaching aids, are probably linked to the fact that these pupils have not reached the level assumed by the authors of the textbooks. In several interesting studies Björn Andersson (1973) has demonstrated the relationship between proficiency in Physics and developmental stages, according to Piaget's division.

Piaget touches upon the influence of the environment but only in general terms. On the other hand, interpreters of

Piaget's theories, who have presented reports during the last forty years, have been able to demonstrate the relationship between the speed with which a person reaches a developmental stage and the quality of a stage on one hand and a variety of socio-economic factors on the other. In a paper by Tuddenham (in Dockrell, W, 1969), the relationship between some tasks of conservation and the father's occupation is illustrated. (By conservation is meant the observation of the constancy of a given quantity, e.g when substances change shape, length, orientation or position). Tuddenham comments on the fairly high correlations between the tasks of conservation and the father's occupation in the following statement:

> "Correlations with father's occupation are also all positive and higher than the correlations with age, also these items tend to involve reasoning about matters universally available to observation, e g the horizontality of water levels. It is hard to see how social advantage could be a very large factor in success on some of these items. The genetic selection implicit in occupational level may well have more to do with it, but on this point we have no data."
>
> (op. cit., p. 65)

Piaget's theory is sociolinguistic in the sense that he judges the factors related to socialization as essential for the development of the child's language. The sociolinguistic approach is even more conspicuous in Werner's and Caplan's theory. This is described in the major work Symbol Formation (1963). The theory has also been presented by Vejleskov (1972) and in the Hellström Report (Reports presented by the Committee on Day Nurseries, 1972). The theory, which in the main has been drawn up by Heinz Werner, reminds us in many respects of Piaget's theory. There are, however, certain differences. Werner is more general in his explanatory models, while Piaget is very careful about distinguishing between polarized concepts. Werner's and Caplan's theory is based on the hypothesis that language develops in a process characterized by a dynamic schematizing activity (Werner, 1948). For the child to be able to use words, it must know something about things in the surrounding world, not only be able to do something with them.

Werner's and Caplan's theory coincides with or supports Noam Chomsky's linguistic theory as described by Vejleskov, 1972. Like Chomsky, Werner and Caplan consider language an autonomous phenomenon. Like Chomsky they also attach great importance to the syntactic structure in their descriptions of linguistic development. It is essential to note that although Werner and Caplan do not acknowledge a description of linguistic development derived from a S-R model, they do recognize that development is due to social factors and that these are a condition of linguistic development.

While Piaget's theory is mainly epistemological, Werner's and Caplan's theory is psycholinguistic, although their interest in the sociolinguistic explanatory model is not very great. Vejleskov (1972) maintains that Werner's and Caplan's theory is "organismic". By this is meant that every behaviour, whether an outer action or an inner cognitive function, can be made intelligible only in relation to the total function of the organism relative to the surrounding world. An organism's behaviour can be understood only if it is related to the outer world, and this is not merely a physico-geographical phenomenon, but must be viewed in relation to the organism - to its endowments and to its goals. (Vejleskov, 1972, p. 9)

2.4 Behaviourism and sociolinguistics

Behaviouristic psychology of language starts from the assumption that the laws of learning, verified by experiments on animals, are applicable to man's acquisition of language too. The leading proponents of the behaviouristic psychology of language are Skinner (1957), Osgood (1963) and Staats (1958).

2.4.1 Skinner's theory of language

Verbal behaviour, according to Skinner, can be explained by the application of the same laws as those in force for other forms of behaviour. Skinner states that there is a feature distinguishing the acquisition of language. Verbal behaviour is not a direct response to the environment given in order to get reinforcement. It rather leads to a reward mediated through the actions of other persons. In the acquisition of language the reinforcement is always social. Skinner illustrates his theory of language by means of a paradigm in which he starts from basic verbal reactions and then proceeds to more complex systems of communication.

The course of development will be as follows:

1. Basic operant paradigm → 2. Echoic operants →
→ 3. Mand → 4. Tact

The *basic operant paradigm* refers to the first linguistic utterances, which are reinforced through the environment and thus tend to increase in number.

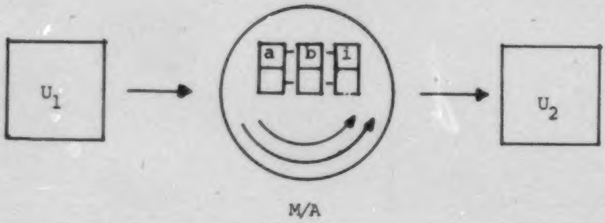
The so-called *echoic operant* or echoic reaction is an example of the interaction between the environment and the child, in which the imitation of a heard stimulus will be reinforced. With so-called *mands* (cp. demand), the acquisition of language takes place through a reaction, starting as a random articulation of speech sufficiently noticeable for somebody in the environment to provide some stimulation, i. e. some response which happens to satisfy the actual need. An example: A parent hears his child pronounce a word similar to the word doll; he then gives the child a doll in order to satisfy its presupposed wish (for the doll). If such a sequence is repeated several times, there is an increasing probability that the child will utter the word 'doll' in order to obtain the object in question, according to Skinner. The fourth and most complicated paradigm in Skinner's linguistic theory is *tact* (cp. contact). To these, the physical environment plays the role of a stimulus. A child, who, for some reason, emits a verbal reaction when it comes into contact with a certain object (stimulus) and then gets reinforced, learns to achieve this reaction or some variety of it, whenever he experiences the same stimulus. Skinner says that there is an interplay between mands and tacts so that mands lead to advantages, reinforcements, for the speaker, whereas tacts lead to advantages for the listener. Skinner has demonstrated his paradigms by means of experiments. With the paradigm of mand it is possible to train a child to emit a certain verbal reaction whenever it experiences a certain need, and with the paradigm of tact one can train a child to name something with any verbal reaction. Carroll (1967) points out that the difficulty lies in the fact that one may have to wait for a long time before the desired reaction occurs. According to Carroll, this can be avoided in experiments by first teaching the child echoic reactions and then connect mands and tacts with these.

Skinner's theory is mechanistic and does not provide any explanation whatsoever of the fact that a linguistic reaction learnt in one way can later on also be used in a different way.

Skinner's theoretical model of language may, at the very most, contribute to explain the development of surface structure of the language.

2.4.2 Osgood's model for language acquisition

Osgood (1963) has also presented a model for the acquisition of language, a model which, in many respects, reminds us of Skinner's paradigm. The model may be illustrated by means of the figure below.



(After Gregersen, 1975, p.27)

In this figure M/A is a receiver or a sender (listener or speaker) and U_1 is a linguistic expression which functions as a stimulus and thus leads to a reaction. This reaction may be constituted by another linguistic utterance.U_2. Osgood tries to illustrate what happens between the stimulus and the response in the circle of the model. A processing takes place in the organism. Osgood assumes that there are two levels: There is an automatic level at which an utterance will immediately lead to a reaction (the reaction of a signal). At a more complex level we may distinguish between three phases, a decoding phase, a, a processing phase,b, and an encoding phase, i. In the figure there are two arrows below the signs a-b-i. Osgood works with two kinds of S-R associations, i.e. two kinds of U_1 and U_2. One is an auditory-vocal channel.In this case U_1 is something which is heard and U_2 is something which is said. The other is a visual-motor channel. In this case U_1 is a picture, an image or some other kind of printed visual expression, while U_2 is a gesture (movement). Unlike Skinner, Osgood uses this model to demonstrate the complex processes in the organism. That Osgood then maintains that the social factors are of utmost importance for the formation of language within the organism, i.e. the processing of stimuli, is of little value to the sociolinguist, as Osgood no more than other behaviourists, gives any explanation of what acutally takes place between the encoding phase and the decoding phase.

2.5 Noam Chomsky's theory viewed from a sociolinguistic angle

Chomsky has presented his theories mainly in his two major works "Syntactic Structures" (1957) and "Aspects of the Theory of Syntax" (1965). Alvar Ellegård is the one who, above all, introduced Chomsky's theories in Sweden (a number of articles about Chomsky's theory of language are collected in "Språk, Språkvetenskap och Språkinlärning" (Language, Linguistics and the Acquisition of Language), Ellegård, 1971. In his first book Chomsky, 1957, takes as his basic assumption that a grammar should consist of three kinds of rules: 1. Phrase structure rules, which may be described by hierarchical tree diagrams. 2. Transformational rules, which make it possible to describe the underlying form of the phrase structure. 3. Morpho-phonemic rules, which convert the strings produced by the transformational rules into the sounds of a sentence.

Transformational rules can be either compulsory or optional. If only compulsory transformations are made, the resulting string will underly a "kernel sentence". If both compulsory and optional transformations are made, strings underlying more complex sentences can be generated. Optional transformations can be either singular or generalized, i.e. they can either operate on one "kernel string" or combine two or more strings.

In the 1965 version Chomsky discusses a division into three components: a syntactic component, a phonological component and a semantic component. Compared with the 1957 version the phonological component is equivalent to the morpho-phonemic rules as mentioned above. (Greene, 1973, p. 50)

The following figure indicates the relationship between the two theories.

1957		1965	
None		Semantic component	
Phrase structure rules Transformational rules	→	Syntactic component	→ Base rules → Transformational rules
Morpho-phonemic rules (Greene, 1973, p. 52)		Phonological component	

Figure 2.1 *The Relations between the 1957 Theory and the 1965 Theory*

With the introduction of a semantic component, transformational rules have been extended to include not only syntactic rules for generating syntax and sentences but also semantic rules for assigning meanings to the sentences.

Greene (1973, p. 52) maintains:

> "In this way transformational grammar sets out to account for the complete linguistic competence of the native speaker, including his ability to produce and understand meaningful sentences."

2.5.1 Chomsky and behaviouristic theories of language

Noam Chomsky's theory of language has brought about a revolution within modern psycholinguistics. In his first book, Syntactic structures (1957), he argues against the meta-linguistic theory, prevalent at the time, i.e. the ideas which gave rise to the so-called Bloomfieldian school. Bloomfield's linguistic theory is behaviouristic. Bloomfield takes the linguistic utterance as a starting-point for a theory based on well-known behaviouristic laws (S-R theories). Ellegård (1971) finds that Bloomfield's theory concerns the surface structure. In such a theory the organism is viewed as capable of mechanical analysis of the structure of any sentence. What takes place is a classification of recurrent elements, i e morphemes which appear in a given order. According to the theory, the analysis can be performed without the organism knowing the meanings of the morphemes. Chomsky (1968) maintains that a theory based on surface structure within the framework of stimulus-response Psychology attempts to provide a satisfactory answer to "the most inexplicable human capacity". The mechanistic theory of learning, as formulated by, among others, Hull and Skinner, supports this theory. It is based on the assumption that reinforcements through associations control learning.

Ellegård (1971) believes that the studies presented during recent years, hardly confirm the validity of such a theory based on surface structure. All children, independently of culture and socio-economic status, learn how to speak at approximately the same time. If the theory referred to would work, i.e. if reinforcement from the surrounding world would have a positive or negative effect, great variations would occur between social groups. Behaviouristic surface structuralism furthermore starts from the assumption that the child, during the acquisition of language, imitates adults who talk. Consequently, according to this theory, language will evolve in accordance with the principles concerning operant conditioning. Ellegård states (1971) that it is practically impossible for children of a certain age to express themselves according to a grammar other than their own. Accordingly it is no use to correct a child when it says "me no see him" and try to make him say "I don't see him". Chomsky (1968), maintains that the linguistic theory based on surface structure, emanating from a behaviouristic theory of learning, has confined itself to a narrow and inadequate idea of what is actually being learnt. In his criticism of the behaviouristic approach, Chomsky (1968) concludes that before we apply established laws of learning to linguistic behaviour, we must decide after what principles linguistic behaviour is organized.

Chomsky's theory of language is not mechanistic but mentalistic. His theory of language, or transformational grammar, is based on deductions.

The name of transformational grammar or transformational theory is tied up with the transformation which takes place when language is developed or generated from the so-called 'deep structure' to the 'surface structure'. Chomsky states (1970) that the surface structure presents the words in categories and phrases directly related to the physical signal from the underlying deep structure. The deep structure, too, is a system of categories and phrases but of a more abstract kind. According to Chomsky,deep structure or linguistic capacity is innate. In his review of Skinner's work Verbal Behavior (1957), Chomsky maintains, unlike Skinner, that the development of language cannot be furthered by practice, reinforcement and learning.

In a survey Greene (1973) has analysed Chomsky's programme of language theory. (Chomsky's theory has been presented in two versions, the 1957 version and the 1965 one.) Greene uses the concept of "two-level theory" about Chomsky's transformational grammar. By this is meant the two structures, surface structure and deep structure. Certain neo-Chomskyans (reported by Greene, 1973) have developed the transformational grammar and introduced a third level - a "three level theory". This three-level model would thus contain the semantic representation of ideas, the syntactic relations of the deep structure and the *final structuring of words in accordance* with the surface structure.

At the end of her work Greene touches upon one of the unanswered questions surrounding Chomsky: How does Chomsky relate linguistic behaviour to the surrounding world? Rommetveit (1972) is also of the opinion that Chomsky in too great an extent is concerned with the dissection of language instead of studying the message. In his works Chomsky often stresses the point that deep structure is innate. On the other hand the development of the so-called surface structure is influenced by a variety of factors. Chomsky does not define these. In his models he makes use of the term "other factors". What he means by other factors should be interpreted as influences from the environment. Chomsky's lack of interest in social influence may be due to the authority of behaviouristic theory. In the first place, this refers to all the studies of relations between different types of behaviour and background variables. By favouring a mentalistic view, which can be derived from classical rationalism, Chomsky takes an interest mainly in the inner structures.In "Language and Mind" (1969) reproduced in Bar-Adon and Leopold (1971,pp. 425-426), Chomsky defines two different approaches to knowledge.

> "The two major factors in acquisition of knowledge, perception and learning have been a subject of study and speculation for centuries. It would not, I think, be misleading to characterize the major positions that have developed as outgrowths of classical rationalism and empiricism. The rationalist theories are marked by the importance they assign to intrinsic structures in mental operation - to central processes and organizing principles in perception, and to innate ideas and principles in learning. The empiricist approach, in contrast, has stressed the role of experience and control by environmental factors."

The neural organizations governing the linguistic development are still unknown. The operations of these neural structures work differently at different ages. Thus we know that cases of aphasia caused by brain damages in early infancy, may be almost totally remedied, whereas, if such cases occur during adolescence or later, language ability will be noticeably impaired. This is probably due to the fact that the organizing of deep structure is different at different ages.

Noam Chomsky's theory of language is not easily accessible, and it is not totally accepted by linguists. His contribution to sociolinguistics concerns primarily his logical division into and definition of deep and surface structure.

2.6 A sociolinguistic theory of influence. Does it exist?

It is doubtful whether it is possible to present a sociolinguistic theory as the research situation appears at present. This has been stated by Gregersen (1975). Sociolinguistics rather constitutes a working model which, with the aid of already existing language theories, seeks to shed light on various kinds of relations which are of great importance to the individual. As sociolinguistics is dependent on what linguistic theory one wants to use, I will try below to evaluate behaviouristic versus mentalistic theory relative to macrosociolinguistic aims. In the light of behaviouristic theory, a sociolinguistic theory appears simple and applicable. If we, like Skinner and other behaviourists and neobehaviourists could determine how the learning of language takes place, the sociolinguistic object of isolating and studying influencing factors would be comparatively easy. The linguistic theory formulated by Bloomfield and developed by Skinner, seeks to explain the surface structure of language by means of various kinds of operant behaviour. If the mechanistic laws work adequately, which is something postulated by behaviourists, sociolinguistics, based on behaviouristic theory, would in principle be able to solve practically all linguistic problems of communication.

As declared in this chapter, a behaviouristic language theory can hardly be used as a basis for an explanation of the acquisition of language. This fact does not necessarily imply that the behaviouristic approach should be excluded from the sociolinguistic model however. The mechanistic-behaviouristic model of learning can be used in order to influence language behaviour on a low level.

The neobehaviourist A Staats (1968) maintains that the controversy between behaviourism and the mentalistic approach originated in a series of misunderstandings. According to Staats, the mentalists have misinterpreted the behaviourists. The conflict between the two schools of thought has developed in such a way that, above all, the proponents of the mentalistic approach level criticism at the behaviouristic views. As an example of this the following can be given: As far as is known to the present writer, Skinner never replied to the criticism levelled by Chomsky in 1959 at Skinner's work on verbal behaviour (1957).

Staats who may be considered a typical advocate of a behaviouristic conception of language thinks that mentalistic theory fails because it cannot in any respect be proved. In his review of mentalism Staats claims that psycholinguists, with Chomsky as its foremost proponent, has presented so-called R-R principles (response-response). These principles make it possible to predict language behaviour from knowledge of earlier language behaviour. But, he states, linguists cannot tall what gives rise to given behaviour. According to Staats, the greatest shortcoming of the mentalistic theory lies in its deterministic contents, since, according to the mentalists, language is developed through a predetermined governing or programming. Staats also thinks that if we wish to influence the linguistic development, we must be concerned with the conditions for language acquisition, i e the principles of learning playing a part in the very development of language. (Staats, 1968, p. 154-158)

It seems as if behaviourists like Staats (1968), Lewis (1971) and Skinner (1957), deliberately or not, have failed to understand certain things, viz the essential part of the mentalistic conception of language, the difference between surface structure and deep structure. Chomsky has never rejected the importance of reinforcement in the training of surface structures. As a matter of fact, his linguistic theory is not very radical with respect to his statements that language is innate. Since the behaviourists have never endeavoured to study the deep structure of language but have always been concerned with the spoken language, i. e. the surface structure, the relevance of this contradiction between behaviourists and mentalists is dubious. The crucial difference between the two schools of thought lies in the attempts made by the behaviourists to explain the total acquisition of language through the application of general laws of learning established by means of experiments, whereas the mentalistic theory admits that these laws apply to the surface structure but maintains that the deep structure of language is related to an inner mental process, which for the present time cannot be described in explanatory paradigms. Chomsky represents a tradition which dates back to the Aristotelian conception of language. The main thread of linguistics runs from Aristotle, by way of the French Port-Royal school in the seventeenth century to the linguistic scientist Ferdinand de Saussure. In the theory of the school of Port-Royal it is shown that a sentence can be decomposed into consecutive phrases, which can be further sub-divided into phrases etc, until the word level is reached, i.e. one works from the depth towards the surface. (Chomsky, 1968, Ellegård, 1971). Saussure distinguished between *langue* and *parole*. Parole constitutes the very speech act, while langue is equivalent to the system of language. Chomsky's concept of competence and performance can be regarded as a further development of Saussure's concepts. According to Hymes (1971), Chomsky considers his concepts of competence and performance as superior to Saussure's concepts, for at the same time they regenerate the Humboldtian conception of an underlying process. Wilhelm von Humboldt's epistemological conception of language acquisition has influenced Chomsky's generative grammar. Humboldt maintained that in every human language there is an underlying universal system.

> "Humboldt believes that all languages will be found to be very similar in their grammatical form, similar not on their surface but in their deeper inner structures. The innate organizing principles severely limit the class of possible languages, and these principles determine the proporties of a language that is learned in the normal way."
>
> (Chomsky, 1971, in Bar-Adon and Leopold, p.426)

Like Chomsky, Piaget bases his mentalistic theory of language on the theory of Science. Chomsky (1968) is rather sceptical towards Piaget's theory of different stages. He states that it is not quite obvious what Piaget takes as his starting-point in the transition from one of the stages he discusses to the next higher one. Referring to a paper by Mehler and Bever (Science vol. 157, No. 37-98, Oct. 1967, pp.141-142), Chomsky states that Piaget's so-called conservation is accomplished during an early period of development. What later develops is due to heuristic techniques. According to Chomsky, this implies that what we observe is not a sequence of intellectual developmental stages but rather a slow progressing in the capacity of combining various types of heuristic techniques with general ideas. Can the mentalistic theory then provide the basis for a sociolinguistic theory? Chomsky very seldom touches upon the environmental influences affecting the performance of language.

Hymes (1971) discusses in detail the meaning of Chomsky's "competence" and "performance" in relation to sociolinguistics. He relates Chomsky's performance to "sociolinguistic interference", and would like to get a wider definition of the concepts of competence and performance. He thinks that if we want to use the linguistic theory in a more particular way, sociolinguistic theory must include a wider definition of the former concept. Hymes (1971, p. 23) finds that a theory can be expounded from the following three hypotheses:

(i) Each social relationship entails the selection and/ or creation of communicative means considered specific and appropriate to it by its participants.

(ii) The organization of communicative means, in terms of social relationship, confers a structure that is not disclosed in the analysis of the means separately.

(iii) The communicative means available in a relationship conditions its nature and outcome.

By means of these three hypotheses Hymes wants to stress the difference between "linguistic grammar" and "speech performance". "Speech performance" or "parole" is affected by a continuum of social forces existing around the individual. According to Hymes, the object of sociolinguistics is to describe the relations of language to the surrounding world, and consequently an integrated theory of sociolinguistic description is needed. Hymes's position does not imply a rejection of Chomsky's linguistic theory but rather an extension of it.

The relationship between Bernstein and Chomsky has been illustrated by the former in his famous article "Social class, language and socialization" (1971). Bernstein interprets Chomsky's "competence" and "performance" in the following way: (Bernstein, 1971)

> "Competence refers to the child's tacit understanding of the rule system, performance relates to the essentially social use to which the rule system is put. Competence refers to man abstracted from contextual constraints. Performance refers to man in the grip of the contextual constraints which determine his speech acts. Competence refers to the Ideal, performance refers to the Fall."

It seems as if Bernstein does not take a definite stand for or against Chomsky's generative grammar. He stresses, however, that we must use one rule system when we study speech, and that a somewhat different one applies to the formal units of the grammar. Bernstein does not accept that the linguistic rule system should be able to shape the cultural system. Instead of Chomsky's rule system Bernstein speaks of an infinite number of speech codes. These must comply with the set of rules in language, but which speech codes are actually used, will depend on the social relationships in specific contexts: the specific country, and the specific linguistic environment of the individual. Bernstein's theory is sociological, for according to Bernstein, speech is a property and the form of speech a consequence of the form of the social relation, i e a quality of the social structure. Similar ideas of the object of sociolinguistics have been presented by Halliday (1973) and Robinson (1972).

Leading sociolinguists like Bernstein, Hymes, Labov, Fishman and Robinson seem to adhere to a mentalistic theory of knowledge, concerning the acquisition of language on a deeper level. It seems, however, as if it has not yet been possible to utilize the mentalistic theory of language for anything else than for stressing that one is interested in performance, la parole, or the speech in which one takes an interest. It is speech that can directly manifest influences from the environment. Speech will thus become a criterion of the sociolect or of speech viewed in relation to social environment.

Chapter 3

VALUE SYSTEMS AND CONCLUSIONS

3.1 Introduction

A recurrent criticism of sociolinguistics has been its lack of an explicit theory. It seems to me that I have confirmed this view by this survey of literature but at the same time I ask myself whether it is really possible to establish a sociolinguistic theory. The criterion of a theory should be its generality, and the construction of a general theory seems impossible to me for the simple reason that value systems and the organization of society are such widely separated phenomena, that the conclusions reached through sociolinguistic research can be valid only for the very society in which a given phenomenon was originally investigated.

This dilemma has caused a variety of conceptions of the objects of sociolinguistics. In polarizing the existing linguistic traditions it is feasible to confront two contradictory conceptions: the socio-liberal view and the Marxist view.

3.2 The socio-liberal view

As is obvious from the section on remedial teaching in chapter 1 the socio-liberal point of view implies that classes of society are considered static phenomena. It is also maintained that the classes exert an influence on language development. That effect should be diminished by remedial programmes. The starting-point is the middle-class language, which is taken as a norm for what one wants to achieve. This view, somewhat unsophisticated in my opinion, is advocated for example in the Orring report. (This report, in Swedish abbr. SIA, is the report of the state commission on the reorganisation of the Swedish school-system, presented in 1974.) In the expression "to create equal opportunities" lies the naive expectation that in some way or other it will be possible to raise the standard of the children who come from "indigent" families. This view has been prevalent in the educational debate in our country since Parliament established the comprehensive school in 1962.

Another example typical of an optimistic socio-liberal view on language development and social influence is found in West-German sociolinguistics. Spokesmen of this view like Oevermann (1972), Sommer (1972) and Wiederhold (1971) declare that there are language differences between various social classes. The three West-German sociolinguists referred to above have in their theses described language differences arising from socio-economic differences. These three dissertations do not contribute to sociolinguistic research. Without any analysis of prerequisites and with an uncritical application of Bernstein's linguistic codes, these works tend to be static and may, if it comes to the worst, strengthen the barriers prevalent in the West German society. I agree with the criticism delivered by Gregersen (1974) against West German sociolinguistics. Gregersen maintains that it is quite devoid of meaning because of its absence of analysis. Nevertheless these three sociolinguists talk about equality. The catch-word seems to be "Chansengleichheit". What is actually meant by this word is "equal opportunities for everybody". We encounter the same optimistic attitudes as in Sweden in the 1960's. With some exaggeration, necessary in a polarized discussion, socio-liberal sociolinguists believe that it is possible to change an individual's behaviour by different measures of support. Furthermore,the type of behaviour aimed at by means of this change is the one which is considered qualitatively superior, which, to most people, is equivalent to middle-class behaviour.

3.3 The Marxist view

The Marxist view, advocated by e.g. Holmlund (1974), Hager Haberland & Paris (1973) and Gregersen (1975), states that a development of language may take place as a function of changed reactions to the surrounding world. Marxist-oriented sociolinguistics does not accept the values implying that one language (that of the middle class) is considered superior to another language (that of the working class). Hager, Haberland & Paris (1973) level devastating criticism at Bernstein's theory of codes, which is considered socio-liberal and fundamentally reactionary. The remedial programmes or compensatory proposals suggested by Bernstein and others (e.g. Halliday and Robinson) are, according to these three authors, nothing but deception because of their vacillation between liberal claims and technocratic exploitation.

Holmlund (1974,pp. 25-26) points out that even if pluralism prevails in society, this does not indicate that the worker has been given greater opportunities. Holmlund writes:

> "We have no evidence of the assumption that an increased division of labour and pluralism in themselves would lead to a greater exploration of boundaries between various meanings and thus also to a more elaborated code. (E K). On the contrary, many critics of society (including Marx) think that an increased division of labour will lead to the detachment of thought from work and consequently to an exploitation of the worker's mental resources as well. The incentive to changes is, in fact, the worker's consciousness of his role in production and of the idea that the collected capital is common property."

3.4 Polarization or synthesis?

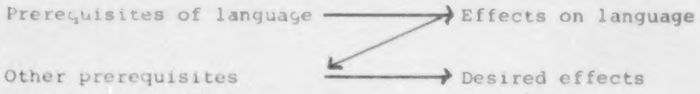
The argument concerns reform or revolution as a means to change. It seems to me as if neither of the extreme points of view in the polarized model described will lead anywhere. The socio-liberal optimism as it appears in remedial programmes is naive, because it disregards the inherent structure of society. In my opinion, Marxist dialectics often lacks point in that it accepts unwarranted assumptions.

Marxist sociolinguistics accuses Basil Bernstein of belonging to the unsophisticated socio-liberals who believe in simple remedial programmes. In an article from 1972 (reproduced in Loman, 1974) Bernstein, however, gave a critical examination of the concept of compensatory teaching. By Marxist critics he has been accused of not placing sociolinguistics into a social context. In his article Bernstein observes that the concept of compensatory teaching is inadequate because it diverts attention from the internal organization and focuses it on the families and the children. According to Bernstein the concept is inadequate because the conclusion one may draw from its use is that the parents are insufficient. Furthermore, the concept of compensatory teaching will divert attention from the deficiencies of the school itself and instead underline the defects of the group, the family and the child. Moreover he argues that the concept turns the attention to the preschool period. Bernstein maintains that one should consider the period up to and including the intermediate stage of schooling as a unit. One should avoid compensatory teaching and instead focus on a systematic investigation of prerequisites and total contexts of the class-room situation. He points out that the child from the working class has a less favourable position in relation to the total culture of the school, because the school is not made for these children and therefore it is not certain that they will profit from it.

In his article, Bernstein also brings up the concept of code, into which he has been accused of putting a value assessment, when systematizing his concepts of elaborated and restricted code. Bernstein says that the fact that a code is restricted does not imply that the speaker cannot use a series of adjectives and **attributes** etc, in certain contexts and under special circumstances, but rather that when such choices are made they are strongly influenced by the context. Bernstein explains his views **further** by stating that a restricted code may very well imply that those who use it might also be able to use more elaborated variants of speech but that these variants are seldom used **in the socialization** of the child within the family (B Bernstein, 1972, In Loman, 1974 p. 258). Bernstein emphasizes **the adaptation of the school** to the child's own culture. He points out that if the teacher's culture is to become part of the child's consciousness, the teacher must also first permit the child's culture to become part of his own consciousness.

Judging from Bernstein's paper on compensatory teaching, I am of the opinion that the criticism levelled at him by Marxist sociolinguists is unjustified. Bernstein may be placed between the two extreme schools of thought mentioned above.

If we consider that social class affiliation governs the recruitement to higher education, if we believe that special linguistic codes develop which may have a restrictive influence on communication in society, and if we come to the conclusion that certain groups in society do not have the same opportunities as others, it must be an important task for society to try to improve social conditions. This general axiom does not imply that one should try to determine the answers in advance for what is good and what is bad. The sociolinguistic task is instead to try to change the individual's conditions as well as the basis for forming judgements on his linguistic code, e.g. at school. This involves a bilateral model of influence: influence in society and influence upon the individual. A plausible sociolinguistic approach may comply with the diagramme below



The figure above displays a relationship but also suggestions for change. The individual's linguistic dispositions (simplified: hereditary dispositions and environmental influences) will have certain effects in terms of language utterances (perhaps expressed in a special linguistic code). If the individual is to benefit from another effect, i.e. another language form, this should derive from efforts to change the dispositions. These changed dispositions will then produce a new effect which is more in accordance with the desired ones. This process may, in my opinion, take place without a revolution in the Marxist sense, but by a continuous reformist activity of which the aim should be to break down the existing class barriers gradually in order to provide the individual with greater opportunities, and, above all, to influence the aims and content of the school.

To make this model of influence work, one must also obtain some idea as to when it is possible to make the greatest contributions. Social scientists at large would probably agree that influence during the pre-school years has a greater effect than influence later on when the individual is growing up. However, one must not from this draw the conclusion that the influence of the school should be unimportant. The fact that the school nowadays is capable of increasing the equality between individuals to such a limited extent, not only in a linguistic respect but in all others, is partly, due to a lack of adaptation on the part of the school to the qualifications of the pupils. At the end of this thesis, I shall therefore bring up for discussion the issue of how to adjust school so that it will be better adjusted to the individual's needs in order to increase the equality between individuals and make them better prepared for the encounter with a linguistically complex society.

Chapter 4

A LONGITUDINAL STUDY OF FACTORS INFLUENCING LANGUAGE DEVELOPMENT. PRESENTATION AND FORMULATION OF THE PROBLEM

4.1 Introduction

The relations between linguistic ability and social factors have been elucidated in sociolinguistic research developed mainly in England and the United States. Bernstein (1971), Fishman (1972) and others have investigated the social influence by means of cross-sectional studies, i.e. linguistic status has been studied in relation to various background variables at a given point of time. It must be quite obvious that steering factors around the individual affect his life differently during different periods. The first fifteen years of life are important to the development of concepts and language. For this reason it is particularly important to study how various forces, emanating from outside the individual, influence the language development during this period. Swedish children, from seven to sixteen years of age, attend the nine-year compulsory comprehensive school, whose aim - apart from providing knowledge, skills and social education - is to try to create an increased equality between individuals. This aspiration is reflected in the formulation of the Swedish Standard Educational Curricula stating that each individual ought to be furnished with an opportunity to develop his natural gifts. This socio-liberal educational goal is not unique for Swedish educational policy. In educational plans drawn up in Europe since World War II, similar ideas of equality with respect to education appear. An essential issue of a more general scope is: Can the school act as an instrument to improve equality? The results previously reported in this thesis indicate that the possibilities of the school to even out the effects of various influencing factors are very limited.

In this work, where language development has been studied on two occasions with an interval of nine years, the author will shed light on the potential influence of the school. In the investigations which will be presented here, all subjects have spent from 5 1/2 years to 8 1/2 years in the comprehensive school. Table 4.1 shows the year of birth of each subject, the time he has spent at school, and the data collections from the two occasions of measurement.

Table 4.1 *The Subjects, Age and Length of School Attendance, and the Collection of Data*

Year of Birth	Subjects			
	1957	1958	1959	1960
Age 1963	5:11-6:7	4:11-5:7	3:11-4:7	3:11
Age 1972	14:11-15:7	13:10-14:6	12:9-13:5	12:9
Grade 1972	9	8	7	6
Data collected:				
No. of Ss taking all tests, 1963	54(26B+28G)	48(27B+21G)	38(16B+22G)	8(7B+1G)
No. of Ss taking all tests, 1972	45(20B+25G)	42(25B+17G)	29(10B+19G)	4(4B)
Grade 1 SRT[1)]	1964	1965	1966	1967
Grade 3 M Sw Ma[2)]	1966	1967	1968	1969
Grade 6 M Sw Ma E[3)]	1969	1970	1971	

1) School Readiness Test

2) Marks for Swedish and Mathematics, Grade 3

3) Marks for Swedish, Mathematics and English, Grade 6 (except Ss born in 1960)

4.2 The aims of the two studies

When the project started in 1963, its original aim was to study the linguistic development of preschool children from the age of four till the age of six and a half year. The results, presented in greater detail in chapter 5, illustrated the linguistic ability as seen from the point of view of developmental psychology. The relationship between linguistic development and external factors was dealt with only to a minor extent.

Because of the increased grants given to the project during the period 1972-1975 (from, among others, "Socialstyrelsen", the National Social Welfare Board), the aims could be **shifted** somewhat. In the plan drawn up in 1971 they were specified by means of the following clauses:

i. to study the validity of the predictions made on the basis of the results obtained from the 1963 study, and

ii. to investigate to what extent linguistic ability is related to social environment factors.

The follow-up study of 1972 was thus designed for a twofold purpose. On one hand it should throw light upon linguistic performance in the upper level of the 9-year compulsory school. (With the exception of four subjects from the 6th grade all subjects were in grades 7-9; see also section 4.3 below.) The aims of the project were thus stated in rather general terms. These generally stated aims have lead to the carrying out of several studies, different from each other. The project called "Språkutveckling och social påverkan"

(Language and Social Influence, abbreviated SOSP), has proceeded in two major directions corresponding to the two points i. and ii. above.

The objects of the SOSP project have been presented by Erasmie (1974 and 1975). This thesis will report the longitudinal study. Partial results have been reported previously by Burén and Forslund (1973), Andersson and Fall (1973), Erasmie (1974:1) and Dahlén (1974).

This thesis will report relations between linguistic, socioeconomic and personality-oriented variables. Data from the two studies will be presented separately and in relation to each other.

4.3 Subjects

A sample of 180 children in the age range from about 4 to about 6 1/2 years of age was drawn at random from the population of preschool children in Norrköping. Originally, the aim of the 1963 experiment was to study language development from 4 to 6 1/2 years of age. For this reason subsamples were selected, where the mean age differed by six months; they thus represented the age groups 4, 4 1/2, 5, 5 1/2, 6 and 6 1/2 years. It was found useful to reduce the age difference within each of the groups. For the different years of birth different months were selected from which the subjects were chosen; data on the children are given in Table 4.2. For the year 1958 the months of March, April, May, September, October and November were thus chosen.

In 1963 a method of "rotating data collection" was used: children born in 1957 were studied during the month of October, those born in 1958 during the month of November, and those born in 1959 during the month of December. Consideration taken to the range of birth dates in each sub-sample, the deviation from the average age in this is thus less than one month in either direction. - The data collection in 1972 took place in October, and therefore the deviation from the average age becomes one month, but the difference between the mean age is reduced; see Table 4.2.

Table 4.2 *Number of Subjects, Dates of Birth and Age at the Time of the Data Collection*

Year and Month of Birth	No of Subjects		Age Range	
	Boys	Girls	1963	1972
1957: 3,4,5	15	15	6:5-6:7	15:5-15:7
1957: 9,10,11	15	15	5:11-6:1	14:11-15:1
1958: 4,5,6	15	15	5:5-5:7	14:4-14:6
1958: 10,11,12	15	15	4:11-5:1	13:10-14:0
1959: 5,6,7	15	15	4:5-4:7	13:3-13:5
1959: 11,12 1960: 1	15	15	3:11-4:1	12:9-12:11
Total	90	90		

Note: The denotation 6:5 (etc.) stands for 6 years 5 months of age

4.3.1 Drop-outs

There were drop-outs among the 180 subjects sampled for the studies in 1963 and 1972. In the investigations of preschool children, with data collection taking place in their homes, the number of drop-outs becomes much higher than when the data collection takes place in the compulsory school. In 1963 a complete data collection was carried out for 147 subjects, and in 1972 for 120 of these subjects. Complete data were thus collected for 120 children. The number of drop-outs can be found in Table 4.3, according to year of age and over the years of the investigation.

Table 4.3 *Drop-Outs in 1963 and 1972. The Number of Drop-Outs is Presented for Each Group in Absolute Figures as well in Percentage*

Year of Birth	Sex	1963		1972		Initial Samples in 1963
		No.	Per Cent	No.	Per Cent	No.
1957	B	4	13.6	6	20.0	30
	G	2	6.7	3	10.0	30
1958	B	3	10.0	2	6.7	30
	G	9	30.0	4	13.3	30
1959/60	B	7	23.3	4	13.3	30
	G	8	26.7	8	26.7	30
Total		33	18.3	27	15.0	180

Note: Subjects with year of birth 1960:1 are also included in the group born in 1959.

In the table above, the half-year age groups have been combined, and the percentage for each group and investigation has been calculated on the base number 30.

The large number of drop-outs is naturally quite disturbing and attempts have been made to analyse it.

4.3.1.1 Causes for dropping-out

Table 4.4 *Causes for Dropping-Out in the 1963 Study*

	Ss Born in 1957		Ss Born in 1958		Ss Born in 1959/60		Total	
	B	G	B	G	B	G	B	G
Parental refusal	1	1	3	7	4	6	8	14
Illness						1		1
Deceased				1				1
Incomplete testing	3	1		1	3	1	6	3
Total	4	2	3	9	7	8	14	19

The causes for dropping-out in the 1972 study were: migration from Norrköping to an unknown community, illness, parental refusal. The number of drops-out in the 1972 study was 27, or 18.4 per cent of the number of subjects in the 1963 study.

Table 4.5 *Drop-Outs Divided into Social Groups in 1972, Including Drop-Outs in 1963 according to Age, Sex and Social Group*

	Born in 1957		Born in 1958		Born in 1959/60		Total	
	B	G	B	G	B	G	B	G
Soc.gr. I	1			1	1		2	1
" " II	3	3	2	1	4	6	9	10
" " III	7	1	3	11	6	10	16	22
Total	11	4	5	13	11	16	27	33

In the following table the subjects in the two studies are compared with the origin group.

Table 4.6 *Chi^2 Test of the 147 Subjects in 1963 and the 120 Subjects in 1972 Compared with the Initial Social Group for All 180 Subjects*

	Initial Group		Ss in 1963		Ss in 1972	
	No.	Per Cent	No.	Per Cent	No.	Per Cent
Soc.gr. I	13	7.2	12	8.2	10	8.3
" " II	81	45.0	67	46.6	60	50.0
" " III	86	47.8	68	46.2	50	41.7
Total	180	100.0	147	100.0	120	100.0
			chi^2=0.27		chi^2=1.81	
			$p > 0.50$		$p > 0.50$	

Note: The social groups are calculated on the socio-economic status in 1963.

4.3.1.2 The subjects in the investigations

On account of the large number of drop-outs certain calculations have been made for the total group of 147 subjects and 120 subjects respectively; see the table below.

Table 4.7 *Subjects who Underwent All the Tests: Distribution According to Sex and Year of Birth*

Year of Birth	Sex	Study of 1963		Study of 1972	
		No. of Ss	Average Age	No. of Ss	Average age
1957	B	26	6.3	20	15.3
	G	28	6.3	25	15.3
1958	B	27	5.3	25	14.3
	G	21	5.3	17	14.3
1959	B	23	4.2	19	13.3
	G	22	4.3	14	13.4
Total	B	76	5.3	64	14.3
	G	71	5.4	56	14.5

See note to Table 4.3

4.3.2 Socio-economic data on the subjects of the study

The socio-economic data on the subjects reported here concern social group, parental education and income.

4.3.2.1 The division into social groups

Many social psychologists and sociologists prefer to distribute their samples into so-called social classes: Upper, Upper-Middle, Lower-Middle and Lower Class subjects. In accordance with the system used in Sweden I have preferred to use a distribution into social groups. Three such social groups are distinguished:

Social Group I: corresponding approximately to the upper class or upper-middle class
Social Group II: middle-class people
Social Group III: corresponding approximately to the working classes.

On deciding upon social group affiliation of a subject, one proceeds from the occupational group affiliation of the child's father. This, in its turn, is correlated with education and income. The relationship between social group and income is not perfect. An example is the fact that a managing director with only primary school as educational background belongs to social group I (cf. Dahlström, 1959). On deciding upon social group affiliation one makes use of the classification of trades and profession of electoral statistics (compiled by SCB, the Swedish National Bureau of Statistics). The Swedish division into social groups undergoes continuous changes, and a shifting towards social group I takes place. Dahlström (1959) reports the following distributions for the whole country: social group I 6 per cent, II 42 per cent and III 53 per cent. The Sandgren Report (1968 Report on the Organization of Universities, U 68) gives an account of the twenty-year-old youth in Sweden in 1968, then made up by 11 per cent from social group I, 39 per cent from social group II and 50 per cent from social group III. The distribution by social groups among the subjects 1963 and 1972, respectively, is shown in the Table 4.8.

Table 4.8 *Social Group Affiliation in 1963 and in 1972*

	The Subjects of 1963, N=147	The Subjects of 1972, N=120	
	Per Cent	Situation in 1963 Per Cent	Situation in 1972 Per Cent
I	8.2	8.3	14.2
II	45.6	50.0	53.3
III	46.2	41.7	32.5
Total	100.0	100.0	100.0

The shifting towards a higher social group is related to further education and changes in occupational activities of the fathers (Burén-Forslund, 1973).

4.3.2.2 Education

In a number of Swedish studies it has been found that parental education is a more homogenous variable than other socio-economic ones, the determination of which is based on several criteria. According to several studies the educational level of the parents is much more important to the scholastic development of the child than social group affiliation. For Sweden this has been confirmed by, among others, Härnqvist (1958), Härnqvist and Grahn (1963) and Svensson (1971). In British and American research the same results have been determined by e.g. Bernstein (1971), Nisbet and Entwistle (1969) and Fishman (1972).

In the present study parental education was divided into five levels, which appear from Table 4.9.

Table 4.9 *The Highest Educational Level of the Parents of the Subjects of 1963 and 1972, Percentages*

Education	The Subjects of 1963, N=147		The Subjects of 1972, N=120			
			Situation in 1963		Situation in 1972	
	father	mother	father	mother	father	mother
1. Primary school	51.7	57.1	50.0	53.3	47.5	48.3
2. Primary school plus professional school	16.3	12.2	15.0	11.7	14.2	11.7
3. "Realexamen" (Diploma from lower secondary school) or equivalent education	15.6	25.9	19.2	28.3	14.2	26.7
4. "Studentexamen" (University entrance examination)	8.8	2.7	7.3	4.2	15.8	10.0
5. Academic degree	7.5	2.0	7.5	2.5	8.3	3.3
Total	99.9	99.9	100.0	100.0	100.0	100.0

The change of social group affiliation to which I called attention in section 4.3.2.1 is evident from a comparison of the educational background of the parents in 1963 and in 1972.

In the Swedish discussion of adult education the concept of "short-term" education is used for primary school with possible additional education of a short duration. In this terminology, the educational levels according to Table 4.10 can be dichotomized into low educational status and high educational status, where categories 1 and 2 constitute low status and categories 3, 4 and 5 high status.

The shift in educational level for the parents of the subjects of the study of 1972 is demonstrated in Table 4.10.

Table 4.10 *Low and High Educational Status of the Parents of the 1972 Subjects, Per Cent, N = 120*

	Situation in 1963		Situation in 1972	
	father	mother	father	mother
Low educational status	65.0	65.0	61.7	60.0
High educational status	35.0	35.0	38.3	40.0

4.3.2.3 Income

In the distribution into brackets of income, the income tax assessments during the years 1962 and 1971 were used. It is based on the income of the fathers, or, in the cases when the mothers are also employed, on the combined earnings of the parents. The income figures of the subjects were classified into one of three categories determined with reference to the distribution of income in the city of Norrköping for the years in question. These distributions are evident from Table 4.11.

Table 4.11 *The Distributions of Income in Norrköping in 1962 and 1971*

Income bracket	Percentiles	Income, 1962	Income, 1971
I	$P_{75}-P_{100}$	11 600-	27 400-
II	$P_{25}-P_{75}$	4 500-11 599	8 700-27 399
III	$P_{0}-P_{25}$	- 4 499	- 8 699

Sources: The Municipality of Norrköping, Statistical Reports, 1963 and 1972.

Since the incomes of the two parents have been added together in the estimation of the economic status of the family, most observations will fall within brackets I and II, as appears from Table 4.12.

Table 4.12 *Combined Income of the Parents, Distributed into Brackets, in 1963 and 1972*

Income bracket	The Subjects of 1963	The Subjects of 1972	
	Per Cent	Per Cent	Per Cent
I	59.2	60.0	58.3
II	37.4	35.8	40.0
III	4.4	4.2	1.7
	N = 147	N = 120	

4.3.2.4 The relations between social group, education and income

The relations between the socio-economic variables can be expressed, on one hand, as the relations between the three variables in each of the two investigations, and on the other hand as the relations of the variables at one point of time with those at the other point of time.

Table 4.13 *The Relations between Social Group and Education, in 1963 and in 1972*

	The Subjects of 1963, *N* =147			The Subjects of 1972,*N*=120					
				1963			1972		
	1	2	3	1	2	3	1	2	3
1. Social group		.52	.48		.60	.50		.67	.55
2. Father's educational background			.65			.69			.69
3. Mother's educational background									

Note: The correlation for the subjects of 1963 is a phi coefficient, i.e. a correlation where the variables are dichotomized in the following way: Social Groups I + II / Social Group III and Educational levels 1+2/ 3+4+5. The relations for the subjects of 1972 are expressed by means of product-moment correlation coefficient.

Table 4.14 *The Correlations between the Results of the Two Investigations in 1963 and 1972 with Respect to Social Group and Education for Subjects of the 1972 Investigation*

	Social group 1972	Father's education, 1972	Mother's education, 1972
Social group 1963	.81	.62	.49
Father's education, 1963		.94	.67
Mother's education, 1963			.92

The correlations between corresponding variables in the two studies are high. The comparatively low correlation between social group and mother's education may be due to the fact that the division into social groups has been based on the occupation of the father. (Cf. Section 4.3.2.1)

4.4 The instruments of investigation: Intelligence tests and linguistic variables

As the aim of the study is to give as broad information as possible about language development, a large number of variables (about 100) have been extracted from the different test instruments. In the 1963 study as well as in the 1972 follow-up study three main groups of variables have been studied:

A. Intelligence
B. Linguistic quality
C. Linguistic quantity

Some test instruments have had close counterparts in the two investigations. At the data collection in 1972, the number of tests was augmented, however. In the following, I will give a survey of the tests used in the two studies. In order not to burden the text, examples of the tests have been enclosed as appendices at the end of the book.

4.4.1 The test battery in 1963

4.4.1.1 Intelligence tests

A. Raven's Progressive Matrices, the Form Board Version

From the non-verbal Raven test the series A, AB and B were used in accordance with the revised version of 1956. The test contains 3 x 12 items. The form board version consists of various patterns made from 3 millimetre thick cardboard. In each pattern one element is missing. The subject had six alternatives to choose among in order to complete the pattern. The subject is supposed to select the missing piece and place it in the gap. There is no time limit imposed on this test.

B. The Draw-a-Man Test

The test, originally developed by Goodenough (1949), was used as an instrument to describe intellectual development. In Sweden Lindahl (1958) has developed the test further and has had it included as a subtest of a school readiness test. The subject is supposed to draw a picture of a man, which is then judged according to criteria which take into concideration completeness as well as number of details. Lindahl's manual from 1958 was used in the scoring procedure.

4.4.1.2 Linguistic tests

Two vocabulary tests were used: Test of Definitions and Test of Recognition.

The Test of Definitions consists of a list of 62 words, taken from Hässelberg's book "Svensk ordlista för skolans lägre klasser" (i.e. Swedish dictionary for the lower forms of school). The words are administrated according to the same instructions that apply to the list of words in the Terman-Merrill Intelligence Test. The subjects are supposed to define words administered verbally by the examiner.

The Test of Recognition consists of three pictures, each containing four drawings; 35 words refer to each picture. When the examiner pronounces a word, the subject is supposed to point to one of the four drawings which goes with the word. The test, called The Quick Test, has been elaborated by Ammons and Ammons (1962) and has been translated and revised by the present author.

The so-called Picture Test consists of eight pictures of various motifs. The pictures were drawn by the Art teacher at the Preprimary School Teacher Training College in Norrköping, Erik Palmér. They were shown in a fixed sequence and accompanied by the instruction: "Tell me everything you can about this picture!" The answers of the children were recorded on tape and were written out word by word. Sixteen linguistic variables were extracted from the Picture Test:

1. Number of Words Given
2. Number of Complete Sentences
3. Number of Correct Words in Complete Sentences
4. Number of Nouns
5. Number of Adjectives
6. Number of Verbs
7. Number of Words Belonging to Residual Parts of Speech
8. Word Index (the number of correct words in complete sentences divided by the total number of words)
9. Sentence Index (the number of correct sentences divided by the total number of sentences)

10. Index of Non-Enumerations (100 - the number of enumerations without any firm sentence structure divided by the number of words)
11. Number of Mono-Syllabic Words
12. Number of Disyllabic Words
13. Number of Polysyllabic Words
14. Content Analysis (the evaluation of content on a scale of seven categories 1-7, where 1 is the lowest score and 7 the highest one. The evaluation was made by an experienced teacher with respect to the following points
    .. The relation between the statement and the content of the picture
    .. The number of details
    .. The composition of words and syntactic elements)
15. Pronunciation Index (100 times the number of incorrectly pronounced words divided with the total number of words)
16. Number of Qualified Words (the number of abstract words and words which are not given in Hässelberg's dictionary)

(See also Erasmie, 1964)

4.4.2 The test battery in 1972

4.4.2.1 Intelligence and creativity tests

WIT III, constructed by Westrin (1969), is a group test consisting of five subtests:

a. Classification
b. Analogies (measure of inductive ability in respect of verbal material)
c. Opposites (measure of verbal comprehension)
d. Combination of Numbers (measure of the individual's ability for thinking in relations using numerical material)
e. Puzzles (measure of spatial ability)

The whole Test WIT III has a time limit of 45 minutes.

Tests of Creativity, constructed by Holmquist (1971), is a group test consisting of two subtests:

a. Construction of Figures
b. Unusal Uses

The time limit is 40 minutes.

4.4.2.2 Verbal tests

The Test of Verbal Comprehension is a multiple-choice test, the purpose of which is to measure the child's passive vocabulary. The test including 100 items, is a revision of a vocabulary test constructed within the so-called SPRENG project ("SPRåkfärdighet i ENGelska", proficiency in English). The items have been derived from Allén's Nusvensk ordbok (a frequency dictionary of modern Swedish) and the tests consist of sequences of ten words each ranging from high to low frequencies. By this procedure the subjects were supposed to be better motivated than if all the items had been arranged with the easy items at the beginning and the difficult ones at the end. The limit is 30 minutes.

The Recognition Test, whose purpose is to measure the child's passive vocabulary, uses the same pictures as the Recognition test in 1963 (see 4.4.1.2). As the latter was constructed to suit preschool children, the items have had to be changed. The revision is based on vocabulary studies of pupils in the upper level of the 9-year compulsory school, in 1972 (Erasmie, 1973).

The purpose of The Cloze Test was to measure the child's active vocabulary (productive capacity). My version of the Cloze test was constructed by Grundin (1972 and 1975) and consisted of a story in which every fifth word was missing. The subjects were asked to fill in the words they thought were missing (41 gaps). The time limit was 15 minutes. The Cloze test was scored using the following categories, which also constituted variables in the data processing:

1. Correct Answers. For a word to qualify as a correct answer it must be the correct word correctly inflected.
2. Synonyms. For a word to qualify as a synonym it must be a synonym of the correct word or an abbreviation of this.
3. Parts of Speech. The word chosen must belong to the same part of speech as the correct word.
4. Incorrect Words
5. Unanswered Items.

The pictures 7 and 8 of the Picture Test from the 1963 study were used to measure various forms of verbal production. Each picture was shown for 15 minutes, and the subjects were told to write a short essay about the picture. The following variables were extracted from the Picture Test:

1. Number of Words Written
2. Number of Nouns
3. Number of Adjectives
4. Number of Verbs
5. Number of Words Belonging to Other Parts of Speech
6. Number of Sentences
7. Number of Long Words (polysyllabics, six letters or more)
8. Readability Index. Formula: LIX (Readability Index) = $\frac{a}{b} + \frac{c}{a} \times 100$, where a = number of words, b = number of sentences and c = number of polysyllabics.

The Verbal Fluency Test, which, like the Picture Test, is a measure of productive capacity, was administrated in such a way that during a three-minute period the subjects wrote down as many words beginning with the letter A as they could think of.

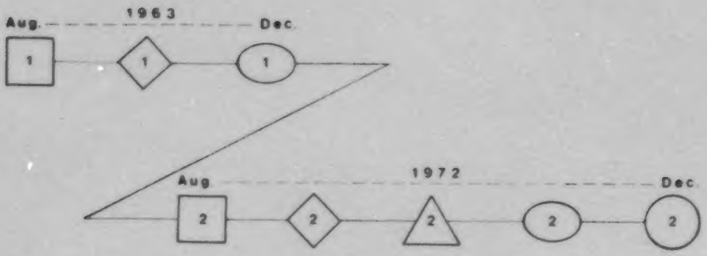
The Anagram Test, consisting of 30 different combinations of letters, which by transpositions of letters formed real words, e.g. bleta = table. The time limit was 8 minutes.

4.4.2.3 Sentence structure analysis

In a separate investigation a sentence structure analysis was carried out on essays written by subjects born in 1958, using the MAMBA method of analysis developed by Teleman (1974). The abbreviation MAMBA stands for "Manual för Menings-ByggnadsAnalys", i.e. Manual for Sentence Structure Analysis. In this analysis thirty lexical and twenty-eight syntactical units were extracted. The sentence structure analysis is described in chapter 8.

4.5 The design of the project

The general design of the data collection in the SOSP project and its various types of data appears from the figure below.



□ 1	demographic data, taken from Norrköpings uppbördsverk (i.e. the tax collection department of the city of Norrköping)
□ 2	demographic data, taken from Länsstyrelsens i Östergötland statistiska byrå (i.e. the Bureau of Statistics of the County Government Board of Östergötland), from Norrköpings kommuns statistiska kontor (the Statistical Office of the Municipality of Norrköping) and from the local education authorities
◇ 1	data derived from a questionnaire sent to the parents of the subjects concerning parental education, the reading of newspapers, magazines and books, etc.
◇ 2	data obtained from the parent questionnaire concerning -apart from the information above in ◇ 1 - information about further education, job satisfaction etc.
⬭ 1	test data, linguistic and intelligence variables obtained from individual tests
○ 2	sociometric data, obtained from studies in schoolclasses
⬭ 2	test data, linguistic and intelligence variables obtained by means of group tests
△ 2	data derived from a questionnaire given to the subjects concerning their interests

4.6 Data treatment

Since 1963 the SOSP project has collected a considerable set of data. A major principle in the treatment of the data has consequently been to reduce these by combining variables into clusters. Certain of the data have been described in previous works; others may be reported in future ones. The statistical treatment of data from the 1963 study differs from that of the 1972 study since the variables of the primary group of 147 subjects were to a lesser extent brought together into clusters.

The description of the different methods and treatments will be presented in the following chapters.

4.7 Summary

The studies of linguistic development and factors influencing this, which will be presented in this thesis, originated from two data collections carried out using the same subjects. In 1963 the linguistic ability of 147 preschool children in the age range of 4 - 6 1/2 years was tested. Of these children, 120 were included in the follow-up study carried out in 1972. The aims of the studies were to study the development of language viewed in relation to external factors of influence like socio-economic, parental education and schooling.

The data collections took place in October, 1963, to January, 1964; in August, 1972, to December, 1972.

Chapter 5

FACTORS INFLUENCING THE DEVELOPMENT OF LANGUAGE - THE 1963 STUDY

5.1 Introduction

At the beginning of the sixties, preschool education in Sweden was strongly influenced by the developmental psychology introduced by Gesell, which originally emanates from the so-called Clark school with Stanley Hall as its foremost proponent. This psychological school took as its starting-point the assumption that development is pre-determined, i. e. one acted on the assumption that the development of the child proceeds according to certain biogenetic laws. In his book Intelligence and Experience (1961) J. McV. Hunt violently attacked the "laissez-faire" psychology developed in Gesell's research laboratories. Supported by research results obtained by Piaget and neuro-psychologists like Hebb and Pilbram, Hunt refuted the two interrelated views of "fixed intelligence" and "pre-determined intelligence". In Sweden Stukåt (1963) presented a study of the effects of children attending pre-primary school. He drew the conclusion that the effects of this were most noticeable in the functions which were practised. This may seem trivial when this is written, in 1975.

Hunt's and Stukåt's research influenced me when I carried out the 1963 study of language development.

The two major questions were:

... How does the language of preschool children develop during the intuitive stage (about 4-7 years of age according to Piaget, see section 2.3.1)?

... To what extent is linguistic development influenced by the environment?

At the time of the 1963 study, Noam Chomsky's theory of deep and surface structures of language was little known in Sweden. As early as in 1962 Ellegård had introduced it to linguists by means of articles and lectures, but to me Chomsky was only an American linguist, whose theory did not influence my approach. Besides studying the questions mentioned above, I also wanted to polemize against the static preschool education prevalent at the time. Now, after the Hellström report (SOU 1972:26) and the parliamentary decision to organize pre-primary education for all six-year-old children, my intentions in 1963 may seem rather unsophisticated. But not until the beginning of the 60's did the discussion start, which lead up to a new pre-primary school. Before that time the pre-primary school system had been a isolated part of the Swedish society. In the debate it was maintained that it should, together with the compulsory school, provide an education making the individual prepared for active life in a democracy. In this way the question of what affects language development was brought up.

Looking back upon what I wrote in articles and books in the 60's, I find that I held the same optimistic attitude with respect to progress as that which characterized the general educational policy regarding the compulsory school. This optimism was reflected in overconfidence in the possibilities of school to eliminate the previous negative influence: To offer children a stimulating and progressive school situation would have an equalizing effect. In the 1963 study

I wanted to show what the socio-economic standard of the parents might mean to a child's linguistic development. This was an important problem at that time. In articles written on the basis of my licentiate thesis (Erasmie, 1964), I maintained that the pre-primary school ought to be extended and that it should include more intellectual training and provide an opportunity to preschool children for learning to read. Even to-day I will vouch for all this, but now we know more about the effects of social environment on education. As appears from the survey given in Chapter 1, we know nowadays that education in itself cannot level out social differences - not even during the preschool period. As an example among others, the result of the Headstart project may be adduced.

I have considered it important to provide this background to the data collected in the 1963 study in order to make this understandable. In the present chapter the main results of the 1963 study of 147 subjects will be reported. The investigation, previously described in Erasmie (1964) will here be rendered only in the form of an outline. Cases requiring synthesis and analysis are enclosed in the appendices.

5.2 Test variables

The variables used are described in Chapter 4, but their distinguishing features will be presented in the following.

5.2.1 Reliability

For each sex and age group, reliability coefficients were estimated by means of the split-half method with the Spearman-Brown correction. There was no noteworthy variation between the groups in respect of reliability. In order not to burden the text, I here will only show the distribution of the reliability coefficients for the total group of 147 subjects. (The reliability coefficients for different groups are reported in Erasmie, 1964.)

Table 5.1 *Distribution of the Reliability Coefficients of the 19 Variables in the 1963 Study*

Reliability Coefficients	Number of Variables
.90 - .99	2
.80 - .89	10
.70 - .79	3
.60 - .69	2
.50 - .59	2
Total	19

5.2.2 Age variation

In order to investigate variation due to age, the means of the variables were transformed to T scores (Garret, 1954, p 306). T scores are distributed with a mean of 50 and a standard deviation of 10.

Formula: $T = \frac{SD'}{SD} (X - \overline{X}) + \overline{X}'$, where

$SD' = 10$
SD = the standard deviation of the original scores
$\overline{X}$ = the mean of the original scores
$\overline{X}' = 50$
X = a score in the original distribution

Table 5.2 *T Scores of the Subgroups*

Variable	Year of Birth 1957	1958	1959/60	*p*
Raven	58	50	39	$p<0.01$
Draw-a-Man	59	51	41	$p<0.01$
Definition	59	51	39	$p<0.01$
Recognition	61	52	37	$p<0.01$
Words	52	49	47	$p<0.01$
Complete sentences	55	49	47	$0.01<p<0.05$
Correct words in complete sentences	55	49	47	$p<0.01$
Nouns	54	50	46	$p<0.01$
Adjectives	51	49	49	$0.05<p$
Verbs	51	50	49	$0.05<p$
Residual parts of speech	50	50	50	$0.05<p$
Word Index	57	48	46	$p<0.01$
Sentence Index	57	47	45	$p<0.01$
Non-Enumeration Index	55	49	45	$p<0.01$
Monosyllabics	54	48	48	$p<0.01$
Disyllabics	52	48	51	$0.05<p$
Polysyllabics	54	50	47	$p<0.01$
Content Analysis	57	50	44	$p<0.01$
Qualitative Words	52	52	47	$0.01<p<0.05$
Number of Subjects	54	48	45	

From these three age groups I have tested the differences between the age groups using analysis of variance between three groups. The probabilities that the differences between the means are caused by random sampling are given in the table 5.2.

Of the nineteen variables, the means of thirteen variables differ significantly at the 0.01 level between the groups.

The six variables, showing no significant differences are: Number of Words, Adjectives, Verbs, Residual Parts of Speech, Dissyllabics and Qualitative Words. The comparatively similar variations of these variables are connected with the fact that they are intercorrelated.

5.2.3 Sex differences

Differences between sexes with respect to achievement in various tests given in the age groups, are small, and the only difference significant at the 1 per cent level is for the "Draw-a-Man-Test". Nor do standard deviations of the variables present any significant differences. Out of 84 comparisons, the standard deviation for the boys was larger in 45 cases and for the girls in 39 cases (Erasmie, 1964).

5.3 Linguistic ability and social influence

In the study reported below linguistic ability will be related to various background variables. To arrive at measures easy to handle, combinations of variables were carried out. On the basis of these combinations three indices were formed, which were then related to social group, income, parental education and the intelligence of the subjects, as measured by the Raven Test, by means of step-wise multiple regression analysis.

5.3.1 Choice of indices

One difficulty, with which I had to contend, was to choose such a method that it could, on one hand, reduce the quantity of data, and on the other hand describe the factors in a nuanced way.

In the literature concerning intelligence structures, there are many studies, in which at least two verbal factors are described (for example Thurstone, 1938, Carroll, 1958 and Fruchter, 1954). The two best known verbal factors are the so-called V and W factors. These factors can be described using Thurstone's terms: as "the general verbal ability" (V) and "the word fluency ability (W). Referring to these studies and to my own intention of finding variables measuring quantitative and qualitative linguistic ability, I tried to identify variables measuring these two abilities. To form indices based on factor analysis alone is a risky procedure, since some of my own variables are linearly dependent in my study, i e they have been extracted from the same test. There is thus, in my opinion, a great risk of obtaining spurious factors, computational artefacts. In my licentiate's thesis (1964) I tried to combine the variables into clusters which had approximately the same content. I did it by means of a so-called cluster analysis, which involves a graphic elaboration of the correlation coefficients. The method, developed by Tryon (1957) and others, does not include rotation, and gives an approximate measure of affinity. From my results in the licentiate's thesis I could identify two clusters of variables corresponding to the V and W factors in Thurstone's meaning. In spite of my hesitation about factor analysis, mentioned above, I also carried out a factor analysis on the 19 linguistic variables in the 1963 study. The factor structure shows that there are two main factors in the test battery, corresponding to V and W. The factor analysis is reported in the Appendix.

Thus,in my opinion, I have support for two indices: the quantitative linguistic index and the qualitative linguistic index. In order to test Bernstein's assumption (1973) that adjectives would be typical of the elaborated code, i e that the use of adjectives is related to linguistic ability, I let Adjectives constitute a third index.

On the basis of the new treatment of the linguistic variables from 1963 I constructed three indices with the following content:

Index A is composed of variables extracted from the Picture Test. The variables which constitute the index is Number of Words, Number of Nouns, Number of Verbs, Number of Residual Parts of Speech, Sentence Length and Number of Polysyllabics. All these variables concern the production of language and resemble those normally loaded on Thurstone's W factor. The index is called "The Quantitative Linguistic Index".

Index B is put together from The Definition Test, The Recognition Test, The Draw-a-Man Test and Raven. It contains the intelligence variables Raven and Draw-a-Man Test and variables which are probably similar to the variables constituting the V factor in Thurstone's factor analyses. Index B is called "The Qualitative Linguistic Index".

Index C consists of the Number of Adjectives and the Percentage of Adjective Variables.

5.3.2 Step-wise multiple regression analysis

One way to describe known influences is to use a multivariate analysis. A simple form is the partial correlation method, which expresses the residual relationship between two variables, where the common influence of one or more other variables has been removed. In my licentiate's thesis (1964) I used the method of partial correlations of the kind called "first-order correlation", i. e. only one variable is held constant. The formula for "first-order partial correlation" with three variables is as follows:

$$r_{12.3} = \frac{r_{12} - r_{13}\, r_{23}}{\sqrt{(1-r_{13}^{2})\,(1-r_{23}^{2})}}$$

The denotation $r_{12.3}$ stands for the residual correlation between X_1 and X_2 when the influence of the variable X_3 has been removed.

In theory the partial correlation can be used for holding one or more variables constant. Ferguson (1966, p. 389) maintains that the difficulties of interpretation when removing the effects of two or more variables are so great that the method can hardly be recommended in this case.

Multiple correlation analysis is not confined to studying the relationship between two variables with the effect of a third removed. Its purpose is also to estimate the maximum possible correlation between the optimally weighted sum of two or more predictor variables and a criterion variable. The purpose of multiple correlation is to maximize the efficiency of prediction.

The multiple correlation coefficient is used to determine the relationship between a criterion variable (a dependent variable) and two or more predictor variables (independent variables). The formula for the multiple regression equation can be written in standard-score form as follows:

$$z_{crit} = \beta_2 z_2 + \beta_3 z_3 + \ldots.\beta_k z_k$$

(Ferguson, 1966, p. 396)

$\beta_1 \ldots \beta_k$ are weights, z_{crit} is a score on the criterion variable, and $z_2 \ldots\ldots.. z_k$ are scores on the predictor variables.

The multiple correlation coefficient can be obtained by means of the formula

$$R = \sqrt{\beta_2 r_{12} + \beta_3 r_{13} \ldots \beta_k r_{1k}}$$

In the step-wise multiple regression analysis the predictor with the highest correlation with the criterion is first introduced. After that the predictor with the highest partial correlation with the criterion variable is added, etc. The procedure is stopped in accordance with a special criterion. For a further discussion and explanation of the method, the reader is referred to Dixon (1973, pp. 305-319). In the analyses reported in this thesis, it was required that the increase of the multiple correlation obtained should be different from zero. R^2 or "the explanatory value" indicates how large a part of the predicted variance can be described by the predictors. If $R^2 = 0$, no part of the variance can be attributed to these. If $R^2 = 1$, the total variance can be described by the predictors. In the analyses carried out, the BMD02R programme was used. For a more detailed description of this the reader should apply to the programme library. I will here reproduce the general description given in this.

> "This program computes a sequence of multiple linear regression equations in a stepwise manner. At each step one variable is added to the regression equation. The variable added is the one which makes the greatest reduction in the error sum of squares. Equivalently it is the variable which has the highest partial correlation with the dependent variable partialed on the variables which have already been added; and equivalently it is the variable which, if it were added, would have the highest F value. In addition, variables can be forced into the regression equation. Nonforced variables are automatically removed when their F values become too low."
>
> (Dixon, 1973, p. 305)

The step-wise regression analysis has been carried out on various combinations of dependent and independent variables. The aim of these different variants has been to shed light on a few socio-economic variables and their influence on linguistic ability by including intelligence (Raven) as a variable, sometimes as a dependent and sometimes as an independent one. The design of the multiple regression analysis study appears from the table below.

Table 5.3 *Combinations of Indices and Predictors in the Step-wise Multiple Regression Analysis*

Alternative	Criterion	Predictors
I	Index A	Social group, Income, Education father, Education mother
II	Index B Including Raven	Like alternative I
III	Index B excluding Raven	Like alternative I
IV	Index B including Raven but excluding Draw-a-Man-Test (DAM)$^{x)}$	Like alternative I
V	Index B excluding Raven and DAM	Like alternative I
VI	Index C	Like alternative I
VII	Index A+B+C	Like alternative I
VIII	Index A	Social group, Income, Education father, Education mother, Raven intelligence
IX	Index B excluding Raven	Like alternative VIII
X	Index C	Like alternative VIII
XI	Index A+B+C	Like alternative VIII

x) DAM = Draw-a-Man-Test

5.3.2.1 Results from the step-wise multiple regression analysis

As a summary of and an introduction to the results obtained through the step-wise multiple regression analyses, the 'strength' of the independent variables will here be demonstrated by means of the ranking of the predictors.

Table 5.4 *The Ranking of the Independent Variables in the Various Alternatives Given in Table 5.3*

Alternative	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	
Social group	3	1	1	1	1	x	1	4	5	5	4	2.6
Income	4	2	3	2	2	2	x	5	4	3	5	3.1
Education												
Father	2	3	2	4	4	1	3	3	2	1	3	2.6
Mother	1	4	4	3	3	3	2	2	3	4	2	2.8
Intelligence (Raven)	x	x	x	x	x	x	x	1	1	2	1	1.3

Note: Raven was not included in the set of independent variables in alternatives I-VII.

According to the ranking list, Raven constitutes the best predictor, whereas income is the least efficient one. The table above roughly expresses the order among the predictors. The various alternatives will be described in the following, in terms of multiple correlation coefficients and variance.

Table 5.5 Step-wise Multiple Regression Between Criterion Variables and Predictors in Eleven Combinations

Alternative and criterion	Predictor variables	Multiple correlation R	Prop explained variance $R^2 \cdot 100$	DF	F value
I Index A	Mother's education	.16	02	1/118	2.96
	Father's education	.24	06	2/117	3.52*
	Social group	.28	08	3/116	3.23*
	Income	.28	08	4/115	2.42*
II Index B including Raven	Social group	.22	05	1/118	5.73*
	Income	.23	05	2/117	3.19*
	Father's education	.24	06	3/116	2.28
	Mother's education	.24	06	4/115	1.72
III Index B excluding Raven	Social group	.17	03	1/118	3.51
	Father's education	.19	04	2/117	2.23
	Income	.21	04	3/116	1.73
	Mother's education	.22	05	4/115	1.46
IV Index B excluding Draw-a-Man-Test but including Raven	Social group	.24	06	1/118	7.00**
	Income	.26	07	2/117	4.48*
	Mother's education	.26	07	3/116	2.91*
	Father's education	.27	07	4/115	2.04
V Index B excluding Draw-a-Man-Test and Raven	Social group	.18	03	1/118	3.85
	Income	.21	04	2/117	2.59
	Mother's education	.22	04	3/116	1.97
	Father's education	.23	05	4/115	1.55
VI Index C	Father's education	.20	04	1/118	4.76*
	Income	.20	04	2/117	2.49
	Mother's education	.21	04	3/116	1.72
VII Index A + B + C	Social group	.22	05	1/118	5.88*
	Mother's education	.23	05	2/117	3.34*
	Father's education	.24	06	3/116	2.39
VIII Index A	Raven	.32	11	1/117	13.91**
	Mother's education	.34	12	2/117	7.73**
	Father's education	.40	16	3/116	7.46**
	Social group	.41	17	4/115	5.79**
	Income	.41	17	5/114	4.65**
IX Index B excluding Raven	Raven	.61	38	1/118	70.86**
	Father's education	.62	38	2/117	36.19**
	Mother's education	.62	39	3/116	24.39**
	Income	.63	39	4/115	18.41**
	Social group	.63	39	5/114	14.68**
X Index C	Father's education	.20	04	1/118	4.75*
	Raven	.21	05	2/117	2.78
	Income	.22	05	3/116	1.96
	Mother's education	.22	05	4/115	1.53
	Social group	.23	05	5/114	1.22
XI Index A + B + C	Raven	.51	26	1:118	41.52**
	Mother's education	.52	27	2/117	21.22**
	Father's education	.52	27	3/116	14.51**
	Social group	.53	28	4/115	10.94**
	Income	.53	28	5/114	8.70**

Note: * = Level of significance 5 per cent
** = Level of signfficance 1 per cent

Table 5.5 illustrates clearly the difference between alternatives I-VII on one hand and alternatives VIII-XI on the other. In the latter group, in which the multiple correlations are significant at 1 per cent level, with the exception of alternative X, Raven's test of intelligence is included as a predictor variable.

Index A, which is a quantitative measure of linguistic ability, is best predicted by the mother's education.

The following four alternatives include *Index B*. Qualitative Linguistic Ability, as a criterion variable alternating Raven and the Draw-a-Man Test. The positions of the predictor variables in the four alternatives deviate slightly.

Index C, which is constituted by the Adjective variables, is best predicted by the father's education. When a combination of the indices is made, social group will be the first predictor variable followed by the mother's and the father's education.

When the intelligence variable is included in the set of predictors, significant F values are obtained, with the exception of the criterion variable C (Adjectives). For index A as well as for index B, intelligence is the best predictor. For index B, Qualitative Linguistic Ability, 38 per cent of the variance is described by the intelligence variable. For index A, Quantitative Linguistic Ability, the corresponding percentage figure is 11 per cent. On combination of indices, intelligence and parental education appear to be the best predictors.

The step-wise multiple regression analysis aims at indicating the ranking order of a number of predictors. It yields the best results if the predictor variables have high correlations with the criterion but low correlations with each other. (See e.g. Ferguson, 1966, pp. 401-402; Garrett, 1954, pp. 419-420.) My predictors show moderate or low correlations with the criterion with an exception made for Raven. This is shown in the table below:

Table 5.6 *Correlation between Criterion Variables and Predictors*

Predictor	Criterion variables										
	I	II	III	IV	V	VI	VII	VIII	IX	X	IX
Social group	$.22^{+}$	$.17^{+}$	$.24^{++}$	$.18^{+}$	.13	.10	$.22^{+}$	$.17^{+}$	.13	.10	$.19^{+}$
Income	.15	.13	$.18^{+}$	.16	.01	.07	.07	.03	.01	.01	.07
Father's education	.08	.03	.15	.11	-.02	$.20^{+}$	.12	.09	.02	$.20^{+}$	.09
Mother's education	.12	.09	.17	.15	.16	.11	$.18^{+}$	.09	.16	.11	.16
Raven								$.61^{++}$	$.33^{++}$	.12	$.51^{++}$

+ = level of significance 5 per cent·

++ = level of significance 1 per cent

In Alternatives I-VII, the multiple correlation coefficients are remarkably low and the predictors taken all together explain a maximum of 8 per cent of the total variance. In Alternatives VIII-XI as much as 39 per cent of the total variance is explained.

5.3.3 Summary of the results of the step-wise multiple correlation analysis

The influence of parental education, social group and income exerted on the linguistic development as defined by me in terms of the three indices is apparently comparatively slight. The different alternatives, where intelligence is not among the predictors, show that only between 4 and 8 per cent of the linguistic ability can be described by social influence variables. When the intelligence variable is included as a predictor we get a somewhat different picture. What is here called intelligence, the scores on Raven's Progressive Matrices, gives the best prediction of linguistic ability.

The low correlations between index of language and background can be explained in different ways.

i. The influence which a priori has an effect on the development, cannot be measured by the instruments used in the 1963 study.

ii. Social group and parental education do not yet exert any influence during the preschool years.

iii. The linguistic structures are in a phase of development, during which the differentiation of surface structure due to environmental influence has only begun.

From the comparisons made between linguistic ability in 1963 and 1972 it appears that social background exerts a much stronger influence at the end of the compulsory school age. As will be explained later on (see Chapter 6) I am prepared to accept the explanation given in paragraph iii. above.

5.4 The development of language during the preschool years

In this chapter I have preferred to account for a very limited part of the results obtained from the 1963 study. The reason for the strict selection has been the fact that the aim of this thesis has primarily been to elucidate the question of how the environment - I refer to socio-economic conditions - exerts an influence during different ages. For this reason the discussion presented in Chapters 6-8 is, in my opinion, more interesting than the ideas presented above. My restricting the discussion in this chapter to one about the prediction of linguistic ability is due to other circumstances, too. I find that several of the results on the development of language presented in 1964, are rather trivial to-day and of little interest viewed in a sociolinguistic context. Those of the results having some relevance to sociolinguistics are given in my licentiate's thesis (Erasmie, 1964). As mentioned in the introduction to the present chapter, a debate on aims and development directions of pre-primary education was going on while the 1963 study was carried out. As a consequence, it seemed advisable to study differences in linguistic ability between children attending pre-primary school and other children. In the very same year as my research was carried out, 1963, Stukåt published the results of an investigation in which he had studied the effects of pre-primary school attendance. He arrived at the conclusion that attendance in pre-primary school produced certain effects in the variables studied. These results were, however, difficult to interpret in respect of vocubulary and linguistic means of expression (the relation between pre-primary school attendance and vocabulary was moderate, r_{bis}= .12).

In a report from 1969 Sjølund summed up the studies of the influence of pre-primary school, carried out in the Scandinavian countries. He, too, obtained low correlations between linguistic variables and pre-primary school.

> "A total of 12 studies of the effects of the nursery school training on the child's linguistic development have been reported from a series of countries, particularly in Europe. Most of these studies indicate that nursery school children develop linguistically in a less satisfactory way than other children. Only two Swedish investigations, carried out in pre-primary school (Stukåt, 1963, 1966, and Erasmie, 1964) show a weak tendency towards a positive effect, although not statistically significant. Due to the

> short stay in pre-primary school, every day or every other day, children in a pre-primary school are also in a way living at home, however, and the educational programme in pre-primary school stresses the educational aspect more than ordinary programmes of day nurseries."
>
> (Sjølund, 1969, p. 338)

Note: The original terms for the institutions:

børnehave = nursery school
lekskola = pre-primary school

Various attitudes and ideological values have entered into the discussion of the influence exerted by the pre-primary school on the child's development. This trend can be traced back to the first systematic studies of activities of pre-primary school which were carried out in the United States in the 30's and 40's, the so-called IOWA studies. These pointed unanimously to the positive effects of a type of activity chiefly characterized by practically oriented training programmes. McNemar (1940) subjected The IOWA Studies to devastating criticism and maintained that the measured effects were to the greatest extent due to initial differences between the pre-primary school children studied and the other children in the control groups.

During the 50's the discussion turned mainly to the significance of the mother during the child's first years of life. The Englishman Bowlby's book (1951) about the dangers of education without a mother, spread like an epidemic all over Europe and led to the new expression "maternal deprivation", which signifies a state of deficiency as a result of poor or non-existent contact with the mother. Bowlby's very dogmatic postulate was criticized during the latter part of the 50's and at the beginning of the 60's. At the request of the WHO an outline of existing studies of maternal deprivation was published in 1962 (Ainsworth, 1962). By analysing existent literature this report tried to specify the dangers a child could be exposed to by attending an institution.

In the discussion of the emancipation of women, which grew more intense in Scandinavia from the middle of the 60's and onwards, the question of pre-primary school education has been viewed in a social context. Education of young children and social influence have been thoroughly discussed by Köhler (1973), and Bernth (1973). A group of young Norwegian women criticized previous studies of the effects of the pre-primary school in an important contribution presented within the scope of the activities of the Nordic Summer University (Haavind and others, 1974). Apart from what has been presented above, I would also like to point to the important research and the considerable committee work which have been carried out within the preschool sphere during recent years.

Hence, when I closely examine my results from 1963, presented in my licentiate's thesis (1964), I find that many substudies included there are irrelevant to-day, in 1975. For this reason I have deliberately left out the major part of the results from the 1963 study. The reader interested in e. g. the relations between attendance of pre-primary school, the stock of books in the home, the sibling constellation and linguistic ability is directed to my previous report (Erasmie, 1964).

5.5 Summary

In this chapter I have accounted for some of the most important results from the study of 1963. It is my intention to present a survey in the latter part of this thesis, where comparisons will be made between the 1963 study and the 1972 study.

The present chapter accounts for the carrying out of the 1963 study, the statistical qualities of the different variables and the relations between linguistic ability defined in terms of three indices, and various social background variables.

The report presented is based on the results described in my licentiate's thesis of 1964 as well as on new analyses which were carried out on the data collected in 1963 after the follow-up study of 1972. The factor analyses and the stepwise multiple regression analyses have been carried out in relation to the data processing of the 1972 study.

Chapter 6

LANGUAGE DEVELOPMENT AND SOCIAL INFLUENCE ON PUPILS IN THE UPPER LEVEL OF THE COMPULSORY SCHOOL. THE STUDY OF 1972.

6.1 The object of the study

When the data collection was carried out in 1972, nine years had passed since the previous study in 1963. The children studied had finished the middle level of the compulsory school and at the time of measurement they were enrolled in the upper level of the compulsory school. There was one exception, however, the four children who, for technical reasons in the sampling, were selected among those born in 1960 and enrolled in the sixth grade at the time of study in October 1972. The subjects of the study had been attended the compulsory school for about six and eight years.

It is commonly felt that the influence of society becomes greater the older the individual. Even if this is reasonable, it would be a frightening conclusion that the positive effect of society would largely affect those individuals who already from earliest childhood are in some way privileged - belong to a high social class or have highly educated parents etc.

In Chapter 1, I have discussed the cumulative deficit - a term synonymous with negative social inheritance. The accumulated effects of various social factors upon the child between the beginning and the end of the compulsory school have therefore become a major point of interest to me.

The problem has been discussed by, among others, Bernstein & Henderson (1969), Ervin-Tripp (1971) and Deutsch (1965). The latter has studied the connection between SES (Socio-Economic Status) and a number of linguistic variables for two experimental groups from the first and the fifth grades. Deutsch's study is not comparable to mine, since it is not a follow-up investigation. His groups contained 292 children selected from a population of 2 500. Of these children 127 were in the first and 165 in the fifth grade. Deutsch found that the connection between SES and linguistic ability increased between the first and the fifth grade.

In my literature review I have not found any follow-up studies, where socio-economic conditions have been related to linguistic variables. But there are several examples of longitudinal studies, where the increased socio-economic influence has been documented in criteria of professional success and other achievement variables. A recent study of this kind is Emanuelson's doctoral thesis (1974), where the connections between living conditions and socio-economic predictor were presented.

In this chapter linguistic status, defined by means of three indices (criterion variables), will be related to predictors in the follow-up study of 1972. The main principle behind the data treatment is the same as the one used to treat the data of 1963: A first step has meant reducing the linguistic variables to indices, and a second one has involved step-wise multiple regression analysis.

6.2 Choice of criterion variables and construction of indices

The choice of criterion variables was made in accordance with the principles employed in the selection of the linguistic variables of 1963.(See the discussion concerning Linguistic Indices in Chapter 5). Three indices were constructed on the basis of an analysis of the nature of the variables, supported by a factor analysis. To distinguish the indices of 1972 from the others, the earlier ones are designated by capital letters (A, B, C), while those of 1972 are designated by Roman numerals (I, II, III).

The factor analysis is presented in the appendix. It had the same weak point as the one carried out on the data of 1963, i e certain variables extracted from the Picture Test were linearly dependent. Two interpretable factors were found, labelled I and II. Factor I shows high loadings in variables measuring language production: Number of Words, Long Words (i e words containing more than six syllables), and Marks for Essays. Factor II measures qualitative linguistic ability and shows high loadings in the variables WIT, Word Understanding, Recognition, and Right Answer (part of the Cloze Test).

In order to construct measures on the basis of the 1972 data, which were comparable with those of 1963, as far as this is possible, I constructed two indices (I and II), which are congruent with the indices A and B of 1963.

In the analysis of the data of 1963, Adjectives formed a separate factor and could be used as the basis for a separate index. Another reason for this procedure was Bernstein's discovery that the use of adjectives is related to the elaborated code. Similarly, the third index from the 1972 study lacks a counterpart in the 1963 study. After careful consideration, a Creativity index was constructed. It has proved difficult to interpret the concept of creativity. Researchers like Barron (1971), Torrance (1971), Hudner (1971) and Sandgren (1974) have tried to find a commonly acceptable definition but without success. The aim behind my choice of a creativity index is to relate creative ability, defined by means of the Creativity Test, to linguistic ability (Indices I and II) and to background factors. Creativity tests are usually related to Guilfords DFI factor (Divergent Figural Implications), (Guilford, 1967). The creativity test used in 1972 consisted of two subtests: (a) Figure Construction and (b) Unusual Uses.

The latter subtest probably measures some kind of creative linguistic ability, i e divergent ability in Guilford's terminology. This ability is included in the total linguistic ability and it is necessary to separate it from that which is practised in the compulsory school. Therefore, the creativity has built a particular index.

In the factor analysis the two Creativity variables were loaded on factor eight which explains three per cent of the variance.

To sum up, for two "pure" linguistic indices I have support from my content analysis and from the factor analysis. The creativity index has support only in my content analysis.

6.2.1 Variables included in the three indices

Index I, Quantitative Linguistic Ability, is computed as the mean of the standard scores for each subject in the following variables:

1. Number of Written Words
2. Nouns
3. Adjectives
4. Verbs
5. Residual Parts of Speech
6. Sentences
7. Polysyllabics
8. Essay Marks
9. Number of Words in Essay 1

Index II, Qualitative Linguistic Ability, is computed as the mean of the standard scores for each subject in the following variables:

1. WIT
2. Anagram
3. Word Fluency
4. Verbal Comprehension
5. Recognition
6. Right Answer in the Cloze Test

Index III is defined by the mean of standard scores for each subject in the two variables:

1. Construction of Figures
2. Unusual Uses

The reason for placing the Word Fluency variable in index II and not in index I (Quantitative Linguistic Ability) was the fact that the factor loading for Word Fluency test was very low in the factor representing quantitative ability.

6.2.2 Correlations between the variables

In table 6.1 the correlation coefficients between the variables building the indices are reproduced.

Table 6.1 *Correlation Matrix for the Variables Building the Indices. The Three Clusters are Separated by Lines*

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Words																
2	Nouns	.84															
3	Adjectives	.41	.43														
4	Verbs	.82	.83	.31													
5	Residual Parts of Speech	.46	.45	.16	.41												
6	Sentences	.85	.71	.40	.72	.73											
7	Polysyllabics	.84	.78	.35	.71	.42	.66										
8	Essay Marks	.71	.57	.28	.62	.34	.57	.73									
9	Words in Essay	.91	.86	.42	.89	.47	.78	.77	.69								
10	WIT	.30	.26	.03	.23	.14	.25	.39	.36	.26							
11	Anagram	.31	.28	.11	.20	.14	.27	.39	.41	.28	.54						
12	Word Fluency	.24	.16	.09	.22	.12	.21	.35	.28	.22	.17	.38					
13	Verbal Comprehension	.29	.22	.05	.26	.21	.30	.42	.39	.28	.58	.50	.38				
14	Pecognition	.22	.09	.00	.18	.18	.26	.33	.35	.20	.51	.45	.40	.77			
15	Right answer Cloze Test	.26	.22	.04	.21	.19	.23	.42	.46	.24	.61	.55	.29	.78	.60		
16	Construction of Figures	.27	.32	.08	.33	.14	.25	.33	.27	.31	.40	.25	.19	.32	.28	.24	
17	Unusual Uses	.40	.38	.18	.34	.26	.35	.42	.32	.36	.27	.17	.20	.22	.21	.13.	.49

$N = 120$ $p < .01$ for $r \leq .25$

$p < .05$ for $r \leq .16$

6.3 Step-wise multiple regression analysis

The step-wise multiple regression analysis which was carried out on data corresponds to the analysis of the study of 1963 which has been presented in Chapter 5. The main difference between the two analyses is the number of predictors. I shall therefore try to motivate my choice of the ten predictor variables which I have used as independent variables in the analysis.

6.3.1 Choice of predictor variable

The concept of predictor has to do with the fact that through the connection between a predictor and a criterion, one tries to describe or explain the variance of the latter. Examples of typical predictor variables are social group and level of education. In order to make the multiple regression analysis rich in information, the correlation between a predictor and a criterion variable should be close, while the relationship between the different predictors should be weak. This condition is difficult to meet, since certain predictors in my study show a close relationship, e.g. social group and education of parents. Besides the predictors of the study of 1963, viz Social Group, Income and Education of Father and Mother, I have included other predictors measuring scholastic achievement. A list of the ten predictors is given in Table 6.2.

Table 6.2 *Predictors in the Multiple Step-Wise Regression Analysis*

Predictor		Mean	Standard Deviation
1. Social Group		2.18	.66
2. Income		1.43	.53
3. Father's Education		2.33	1.40
4. Mother's Education		2.08	1.21
5. Marks for Swedish,	grade 3	3.22	.94
6. Marks for Mathematics,	grade 3	3.39	.96
7. Marks for Swedish,	grade 6	3.08	.97
8. Marks for Mathematics,	grade 6	3.14	1.04
9. Marks for English,	grade 6	2.98	.95
10. School Readiness Test		22.63	5.49

As in the analysis of the data of 1963, criterion and predictor variables have been related in a number of combinations, called alternatives, shown in the following table.

Table 6.3 *Combination Predictor Sets in the Step-Wise Multiple Regression Analysis. Data of 1972*

Alternative	Criterion	Predictors
I	Index I	Predictor Numbers: 1,2,3, 4,5,6,7,8,9,10
II	Index II	Same as Alternative I
III	Index III	Same as Alternative I
IV	Index I+II+III	Same as Alternative I
V	Index I+II+III excluding WIT	Same as Alternative I
VI	Index I	Predictor Numbers: 1,2,3,4
VII	Index II	Same as Alternative VI
VIII	Index III	Same as Alternative VI
IX	Index I+II+III	Same as Alternative VI
X	Index I+II+III excluding WIT	Same as Alternative VI
XI	Index I	Predictor Numbers: 1,2,3,4 and WIT
XII	Index II excluding WIT	Same as Alternative XI
XIII	Index III	Same as Alternative XI
XIV	Index I+II+III excluding WIT	Same as Alternative XI

6.3.2 Rank order of predictors

As in Chapter 5, I shall give the rank order of the predictors in the fourteen alternatives which were explained in Table 6.3 above. The various alternatives are presented in Tables 6.4 (I V), 6.5 (VI-X) and 6.6 (XI-XIV).

Table 6.4 *Rank Order of Predictors in Alternatives I-V*

Predictor	Rank Order in Combination					
	I	II	III	IV	V	$\bar{X}_{ranks}$
Social Group	3	8	6	9	9	7.0
Income	10	6	9	6	7	7.6
Father's Education	2	10	3	2	2	3.8
Mother's Education	9	9	2	5	5	6.0
Marks for Swedish, grade 3	6	5	5	7	6	5.8
Marks for Mathematics, grade 3	8	2	8	8	8	6.8
Marks for Swedish, grade 6	1	1	7	1	1	2.2
Marks for Mathematics, grade 6	7	7	1	3	3	4.2
Marks for English, grade 6	4	4	10	4	4	5.2
School Readiness Test	5	3	4	10	-	5.5

Table 6.5 *Rank Order of Predictors in Alternatives VI-X*

Predictor	Rank Order in Combination					
	IV	VII	VIII	IX	X	$\bar{X}_{ranks}$
Social Group	2	4	3	2	2	2.6
Income	4	2	4	3	3	3.2
Father's Education	1	3	2	4	4	2.8
Mother's Education	3	1	1	1	1	1.4

Table 6.6 *Rank Order of Predictors in Alternatives XI-XIV*

Predictor	Rank Order in Combination				
	XI	XII	XIII	XIV	$\bar{X}_{ranks}$
Social Group	3	3	3	4	3.3
Income	4	2	5	4	3.8
Father's Education	1	5	4	-	3.3
Mother's Education	-	4	2	2	2.7
WIT	2	1	1	1	1.3

6.3.3 The criterion variables and the ten predictors

The results of the step-wise multiple regression analysis for the alternatives I-V are shown in Table 6.7.

Table 6.7 *Step-Wise Multiple Regression Analyses between Criterion Variables and Ten Predictors*

Criterion	Predictor (Number in brackets)	Multiple Correla- tion R	Prop Ex- plained Variance R^2 . 100	*DF*	*F* Value
Index I	Swedish Grade 6(7)	.42	18	1/118	25.20^{++}
	Educ Father(3)	.50	25	2/117	19.82^{++}
	Social Group(1)	.51	26	3/116	13.87^{++}
	English Grade 6(9)	.52	27	4/115	10.63^{++}
	School Readi- ness Test(10)	.52	27	5/114	8.73^{++}
	Swedish Grade 3(5)	.53	28	6/113	7.36^{++}
	Mathematics Grade 6(8)	.53	28	7/112	6.30^{++}
	Mathematics Grade 3(6)	.53	28	8/111	5.53^{++}
	Educ Mother(4)	.53	28	9/110	4.90^{++}
	Income(2)	.53	28	10/109	4.38^{+}
Index II	Swedish Grade 6(7)	.69	47	1/118	112.36^{++}
	Mathematics Grade 3(6)	.78	61	2/117	90.66^{++}
	School Readi- ness Test(10)	.79	62	3/116	67.06^{++}
	English Grade 6(9)	.80	64	4/115	51.95^{++}
	Swedish Grade 3(5)	.80	64	5/114	41.99^{++}
	Income(2)	.80	64	6/113	35.35^{++}
	Mathematics Grade 6(8)	.80	64	7/112	30.35^{++}
	Social Group(1)	.81	66	8/111	26.59^{++}
	Educ Mother(4)	.81	66	9/110	23.58^{++}
	Educ Father(3)	.81	66	10/109	21.10^{++}
Index III	Mathematics Grade 6(8)	.36	14	2/117	17.07^{++}
	Educ Mother(4)	.37	14	2/117	9.35^{++}
	Educ Father(3)	.39	15	3/116	6.75^{++}
	School Readi- ness Test	.40	16	4/115	5.34^{++}
	Swedish Grade 3(5)	.41	17	5/114	4.61^{++}
	Social Group(1)	.41	17	6/113	4.00^{++}
	Swedish Grade 6(7)	.43	18	7/112	3.56^{++}
	Mathematics Grade 3(6)	.43	18	8/111	3.20^{++}
	Income(2)	.43	18	9/110	2.82^{++}
	English Grade 6(9)	.43	18	10/109	2.52^{++}
Index I+II+III	Swedish Grade 6(7)	.60	36	1/118	67.03^{++}
	Educ Father(3)	.65	42	2/117	41.84^{++}
	Mathematics Grade 6(8)	.57	45	3/116	31.37^{++}
	English Grade 6(9)	.68	46	4/115	24.30^{++}
	Educ Mother(4)	.68	46	5/114	19 70^{++}
	Income(2)	.68	46	6/113	16.37^{++}
	Swedish Grade 3(5)	.68	46	7/112	13.95^{++}
	Mathematics Grade 3(6)	.68	46	8/111	12.15^{++}
	Social Group(1)	.68	46	9/110	10.72^{++}
	School Readi- ness Test(10)	.68	46	10/110	9.57^{++}
Index I+II+III excluding WIT	Swedish Grade 6(7)	.58	34	1/118	60.72^{++}
	Educ Father	.63	40	2/117	37.60^{++}
	Mathematics Grade 6(8)	.64	41	3/116	27.60^{++}
	English Grade 6(9)	.65	42	4/115	21.39^{++}
	Educ Mother(4)	.66	44	5/114	17.28^{++}
	Swedish Grade 3(5)	.66	44	6/113	14.47^{++}
	Income(2)	.66	44	7/112	12.42^{++}
	Mathematics Grade 3(6)	.66	44	8/111	10.81^{++}
	Social Group(1)	.66	44	9/110	9.53^{++}

Note: Variable 10, School Readiness Test, is removed because of the small *F* Value to enter in step 9. The *F* Value for deletion is put at .005.

+ = Level of significance 5 per cent
++ = Level of significance 1 per cent

The main part of the total variance for each analysis is found for the first two predictors. The increase in variance found since is small, and it is therefore meaningful to look at predictors 1 and 2 in each alternative more closely. In Table 6.8 the first two predictors in each alternative are presented.

Table 6.8 *First and Second Predictor in the Combination: Alternatives I-V*

Alternative and Criterion	First/ Second Predictor (Number in Brackets)	Explained Variance by First Predictor Percentage	Increase in Variance between First and Second Predictor	Percentage Variance Predictor 1 and 2 to total Variance	Number of Predictors in the Matrix
I. Index I	Swedish Grade 6(7)/ Educ Father(3)	17.6	7.7	88.37	10
II. Index II	Swedish Grade 6(7)/ Mathematics Grade 3(6)	48.8	12.0	92.17	10
III. Index III	Mathematics Grade 6(8)/ Educ Mother(4)	12.6	1.1	73.38	10
IV. Index I+II+III	Swedish Grade 6(7)/ Educ Father(3)	36.2	5.5	89.22	10
V. Index I+II+III excluding WIT	Swedish Grade 6(7)/ Educ Father(3)	34.0	5.2	89.34	9[1]

[1] See notation Table 6.7.

Marks for Swedish in grade 6 is the best predictor, except for for the criterion variable "Creative Ability". This can be considered self-evident, and therefore the second predictor in each case is more interesting.

The parental education variables are good predictors in all indices except II. Their power of prediction is greatest in Index I, Quantitative Linguistic Ability. Index II, which includes Qualitative Linguistic Ability, is best predicted by two achievement variables, Swedish, grade 6 and Mathematics, grade 3. Index II is based on tests which measure scholastic verbal abilities, such as Word Comprehension and Ability to Form New Words. The two predictors Swedish, grade 6 and Mathematics, grade 3, explain 92 per cent of the variance which can be explained by the ten predictors together. This means that these two predictors are completely dominant in the prediction of Qualitative Linguistic Ability.

Index III differs from the others, since Mathematics, grade 6, is at the top of the hierarchy of predictors and the multiple correlation coefficient between the first predictor and criterion is lower than the corresponding one in Indices I and II: Mathematics in grade 6 explains, therefore, only 13 per cent of the variance.

When the indices are grouped together it is clearly seen how the school variables predominate over the socio-economic variables as predictors of linguistic ability. Do these results mean that the influence from socio-economic circumstances is small compared with the influence from the school? The answer is no, because the close relationship between language indices and knowledge variables has to do with the similarity of the variables. The concepts of criterion and predictor have a limited relevance, for the achievement variables could have been entered as criterion variables, i.e. dependent on socio-economic factors. The results show that language indices I and II include elements that are common to all achievement variables. The explained variance of the achievement predictors can therefore be seen as a phenomenon of similarity between criterion and predictor. This is a reasonable interpretation which is strengthened by an inspection of the simple correlations between achievement variables and indices. These relationships are seen in Table 6.9.

Table 6.9 *Correlation between Criteria and Predictors: Swedish, Grade 3(5), Swedish, Grade 6(7), Mathematics, Grade 3(6), and Mathematics, Grade 6(8)*

Criterion	Predictor			
	Swedish Grade 3(5)	Swedish Grade 6(7)	Mathematics Grade 3(6)	Mathematics Grade 6(8)
Index I	.30	.42	.26	.34
Index II	.69	.70	.69	.67
Index III	.18	.24	.31	.36
Index I+II+III	.50	.58	.54	.59

$N = 120$ $p<.05$ for $r\leq.16$
$p<.01$ for $r\leq.25$

In order to show the influence of socio-economic factors alone, we shall in the following consider the stepwise multiple regression analysis carried out between criterion variables and four socio-economic predictor variables.

6.3.4 The criterion variables and the four predictors

In the analyses involving ten predictors (cf Table 6.7), 28 per cent of the total variance could be accounted for in respect of Index I, 66 per cent in respect of Index II and 18 per cent of Index III. After a reduction of the number of predictors the predicted variance decreased considerably. This more or less self-evident decrease is interesting, because it sheds light on, on one hand, the relationship between achievement predictors and socio-economic predictors and, on the other, the influence of socio-economic factors in the two studies. A comparison between socio-economic influence on the two occasions will be presented in section 6.4. In this I will study the analyses of the material of 1972 more closely. The results of the step-wise multiple regression analysis for the socio-economic predictors can be seen in the following table.

Table 6.10 *Step-Wise Multiple Regression Analyses between Criterion Variables and Four or Five Predictors*

Criterion	Predictor (Number in Brackets)	Multiple Correlation *R*	Prop Explained Variance $R^2 \cdot 100$	*DF*	*F* Value
Index I	Educ Father(3)	.32	10	1/118	13.46^{++}
	Social Group(1)	.35	12	2/117	8.00^{++}
	Educ Mother(4)	.35	12	3/116	5.35^{++}
	Income(2)	.35	12	4/115	4.00^{++}
Index II	Educ Mother(4)	.22	05	1/118	6.23^{++}
	Income(2)	.27	07	2/117	4.47^{++}
	Educ Father(3)	.27	07	3/116	3.00^{++}
	Social Group(1)	.27	07	4/115	2.44^{++}
Index III	Educ Mother(4)	.19	04	1/118	4.67^{+}
	Educ Father(3)	.21	04	2/117	2.75^{+}
	Social Group(1)	.21	05	3/116	1.87
	Income(2)	.21	05	4/115	1.40
Index I+II+III	Educ Mother(4)	.30	09	1/118	11.84^{++}
	Social Group(1)	.34	11	2/117	7.39^{++}
	Income(2)	.34	12	3/116	5.11^{++}
	Educ Father(3)	.35	12	4/115	3.90^{++}
Index I+II+III excluding WIT	Educ Mother(4)	.28	08	1/118	10.70^{++}
	Social Group(1)	.32	10	2/117	6.81^{++}
	Income(1)	.33	11	3/116	4.81^{++}
	Educ Father(3)	.34	11	4/115	3.67^{++}
Index I 1)	Educ Father(3)	.32	10	1/118	13.46^{++}
	WIT(5)	.41	17	2/117	11.92^{++}
	Social Group(1)	.42	18	3/116	8.51^{++}
	Income(2)	.42	18	4/115	6.34^{++}
Index II	WIT(5)	.62	39	1/118	74.72^{++}
	Income(2)	.63	41	2/117	39.98^{++}
	Social Group(1)	.64	41	3/116	26.83^{++}
	Educ Mother(4)	.64	41	4/115	20.27^{++}
	Educ Father(3)	.64	41	5/114	16.17^{++}
Index III	WIT(5)	.39	15	1/118	21.23^{++}
	Educ Mother(4)	.40	16	2/117	11.36^{++}
	Social Group(1)	.41	17	3/116	8.14^{++}
	Educ Father(3)	.42	18	4/115	6.18^{++}
	Income(2)	.42	18	5/114	4.91^{++}
Index I+II+III 1)	WIT(5)	.57	33	1/118	58.04^{++}
	Educ Mother(4)	.59	35	2/117	31.34^{++}
	Income(2)	.59	36	3/116	21.33^{++}
	Social Group(1)	.60	36	4/115	15.89^{++}

1) Variables 4 and 3 respectively are removed, because the *F* value limitation for deletion is stated to .005.

+ = Level of significance 5 per cent
++ = Level of significance 1 per cent

The variance described by the four socio-economic predictors is between 5 and 12 per cent. The education variable has the highest values throughout. When intelligence (WIT) is added as a predictor, the explained variance increases considerably. It varies between 18 and 41 per cent.

In the interpretion of the predictors, it is important to study the intercorrelations between the criterion variables and the predictor variables. These relationships are shown in Table 6.11.

Table 6.11 *Correlation Matrix for Criteria and Predictors*

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1.Index I		$.40^{++}$	$.41^{++}$	$.77^{++}$	xx	$.31^{++}$	.14	$.32^{++}$	$.26^{++}$	$.32^{++}$
2.Index II			$.37^{++}$	$.75^{++}$	xx	$.13^{+}$	$.19^{+}$	$.13^{+}$	$.20^{+}$	$.62^{++}$
3.Index III				$.78^{++}$	xx	.05	.03	.08	$.20^{+}$	$.39^{++}$
4.Index I+II+III					xx	$.20^{+}$	.15	$.21^{+}$	$.28^{++}$	$.57^{++}$
5.Index I+II+III excluding WIT						$.28^{++}$	$.17^{+}$	$.29^{++}$	$.29^{++}$	xx
6.Social Group							$.37^{++}$	$.67^{++}$	$.54^{++}$	$.39^{++}$
7.Income								$.28^{++}$	$.19^{+}$	.08
8.Educ Father									$.69^{++}$	$.21^{+}$
9.Educ Mother										$.25^{++}$
10.WIT										

$N = 120$ + = $p < .05$ for $r \leq .16$
++ = $p < .01$ for $r \leq .25$

From the above table it can be seen that the highest correlations are found between the indices and WIT and between the predictors Social Group, Income and Educational Level of the Parents. As has been pointed out earlier the step-wise multiple regression analysis works best when the relationships between criterion and predictor variables are high, but those between predictors are low. Only combinations with WIT satisfy these conditions.

In spite of the fact that the correlation matrix is disadvantageous for the step-wise multiple regression analysis, data from this allow the following interpretation.

When WIT is not a predictor, the level of Education of the Mother enters as the first predictor in the equation in all alternatives except Index I. The level of Education of the Mother and Social Group are therefore the best predictors of linguistic ability according to the interpretation of the three indices. When WIT is involved as a predictor, the linguistic ability is best predicted by the intelligence of the subject in conjunction with the Education of the Mother.

6.4 Influences in 1963 and in 1972

In his study of the cumulative deficit, Deutsch found that the influence of socio-economic factors increased with age. This means that the socio-economic forces create greater differences in linguistic ability during school age than during preschool age.

I would therefore like to shed light on the differences between influence in 1963 and 1972. The indices that were formed in 1963 are not wholly comparable with those of 1972. But as they are rather similar with regard to the content, I also have made an analysis of the relationship between language indices in 1972 as criterion variables, and Social Group, Income, Education of Father and Mother in 1963 as predictor variables.

Table 6.12 *Comparison between 1963 and 1972 of Rank Orders of Explained Variance in Entering the Equation of the Predictors of Language Ability in Step-Wise Multiple Regression Analyses*

Criterion	Entering Predictors in 1963 on Criteria in 1963 (Numbers in Brackets)	Explained Variance $R^2 . 100$	Entering Predictors in 1972 on Criteria in 1972 (Numbers in Bracket)	Explained Variance $R^2 . 100$	Entering Predictors in 1963 on Criteria in 1972 (Numbers in Bracket)	Explained Variance $R^2 . 100$
Quantitative Ability (Index A and Index I resp)	Educ Mother(4)	2	Educ Father(3)	10	Educ Father(3)	9
	Educ Father(3)	6	Soc Group(1)	12	Soc Group(1)	10
	Soc Group(1)	8	Educ Mother(4)	12	Educ Mother(4)	11
	Income(2)	8	Income(2)	12	Income(2)	11
Qualitative Ability (Index B and Index II) including Intelligence	Soc Group(1)	6	Educ Mother(4)	5	Educ Mother(4)	5
	Income(2)	7	Income(2)	7	Soc Group(1)	6
	Educ Mother(4)	7	Educ Father(3)	7	Income(2)	6
	Educ Father(3)	7	Soc Group(1)	7	Educ Mother(3)	7
Index A+B+C and Index I+II+III resp including Intelligence	Soc Group(1)	5	Educ Mother(4)	9	Educ Mother(4)	7
	Educ Mother(4)	5	Soc Group(1)	11	Soc Group(1)	7
	Educ Father(3)	6	Income(2)	12	Income(2)	7
			Educ Father(3)	12	Educ Father(3)	7

The agreement between the rank order of the predictors is good. The rank orders for the predictors of 1972 and 1963 in the criterion variables in 1972 are nearly identical.

The trend towards an increased influence of the predictors of linguistic ability which was formulated earlier in this chapter is shown in Table 6.12. When the indices are added, the variance from three predictors in 1963 explains 6 per cent. In 1972 the explained variance from four predictors is 12 per cent. In all three combinations with the indices added, the Education of the Mother and Social Group are the best predictors of the four that have been studied.

The prediction of the criteria in 1972 is more or less identical whether predictors from 1963 or 1972 are used. This is due to the fact that the change in the predictors between 1963 and 1972 is smallest for Social Group and Education of Mother (See Table 6.13).

Table 6.13 *Phi Coefficients between Socio-Economic Status in 1963 and 1972*

Variable	Phi-Coefficient
Social Group(1)	.79
Income(2)	.45
Educ Father(3)	.57
Educ Mother(4)	.78

$N = 120$

The results of the step-wise multiple regression analysis indicates that relationship between socio-economic factors and linguistic ability increases with the age of the individual. This can be seen more clearly if the indices in 1963 and 1972 are correlated with the predictors in 1963. (See

Table 6.14.)

Table 6.14 *Correlations between the Criteria A+B+C and I+II+III respectively and the Predictors*

Predictor	Criterion A+B+C, 1963	Criterion I+II+III, 1972	*t* Values of Difference between r Values 1)
Social Group	.22	.29	.294
Income	.07	.17	.958
Educ Father	.12	.30	2.107
Educ Mother	.18	.30	1.400

$N = 120$

1) $t = \frac{(r_{12} - r_{13})\ (N-3)(1 + r_{23})}{\sqrt{2(1-r_{12}^2 - r_{13}^2 - r_{23}^2 + 2r_{12}\ r_{13}\ r_{23})}}$ where r_{12} and r_{13} are the coefficients between predictors in 1963 and 1972; and r_{23} is the coefficient between the criteria in 1963 and the criteria in 1972.

6.5 The steering predictor

Of all the socio-economic predictors, the Education of the Mother takes the position of "steering predictor". This is apparent from several of the combinations that have been studied. This situation has to do with the traditional roles for men and women according to which it is the mother who brings up the child and will in this way influence its linguistic ability. That the mother should influence the early linguistic development and that that should appear in the results of 1963 was therefore to be expected, but I find it remarkable that the influence of the mother in relation to the other predictors should be so great in the study of 1972. The effect of the educational level of the mother will be studied more closely in Chapter 7, where the difference in linguistic ability between 1963 and 1972 will be related to the various socio-economic predictors.

6.6 Linguistic ability and interest

In order to study the connection between interest variables and linguistic ability, the subjects of 1972 were made to fill in a questionnaire indicating their interests in taking part in sixtytwo different activities, judged on a scale from one to five. This questionnaire is reproduced in Appendix.

A comparison between sex and age groups shows that the mean interest point for the boys decreases with increasing age. This trend is tested by a variance analysis, $F = 4.04$, $0.5 < p < .01$.

The mean interest point for the girls remains constant over age groups. There are no significant differences in interest point between boys and girls ($F = .05$).

Table 6.15 *The Mean Interest Point. Sex and Age.*

	Boys			Girls			All Groups Combined
	Year of Birth			Year of Birth			
	1957	1958	1959/60	1957	1958	1959	
Mean	148.9	153.0	164.7	155.7	155.5	157.0	155.3
Standard Deviation	19.12	17.05	17.83	13.51	17.52	19.86	17.86
N	21	23	20	23	18	21	120
						r_{KR21}	.80 1)

---

1) The formula $r_{xx} = \frac{n}{n - 1} \{ 1 - \frac{\bar{X}(n - \bar{X})}{n s_x^2} \}$, called Kuder-Richardson formula No 21, is used because the items proved equally difficult. r = reliability defined as the internal homogeneity of the test material, $\bar{X}$ is the mean of the scores, s_x^2 is the variance and n is the number of items.

In order to relate different types of interest to linguistic ability a factor analysis was carried out for the combined groups.

19 factors were extracted. Kaiser's criterion with rotation to eigenvalue 1 was used. The first eight factors, which explain 47 per cent of the total variance have been interpreted in the form of eight different directions of interest. (The matrix of factor analysis is shown in appendix.)

Table 6.16 shows the eight factors and the items which received the highest loadings.

Table 6.16 *Eight Interpreted Factors from the Factor Analysis of the Interest Scale*

Factor Number and Interpretation	Item Number
1. Interest in construction	
To build aeroplane models	15
To build other models	16
To build technical models	40
To work by hand	1
To make experiments	59
2. Esthetic interest	
To perform in plays	6
To weave	10
To make handicraft	27
To draw or paint	29
To solve jigsaw puzzles	32
3. Interest in social relations	
To participate in parties	3
To dance	7
To be together with friends	19
To phone	30
To go to the youth club	42
To go to the cinema with friends of the same age	55
4. Interest in sports	
To see sport competitions	5
To play football	21
To play icehockey	22
To participate in a sport team	24
5. Interest in verbal productions	
To use a typewriter	17
To daydream	28
To produce written stories	34
To write poems	35
To participate in discussions	36
6. Interest in collecting	
To collect insects	45
To collect coins	46
To collect stamps	47
To take part in a stamp-collecting club	48
To collect picture labels etc	56
7. Interest in club activities	
To be a member of a social group	4
To be a member of a scout patrol (or similar)	37
To participate in the church youth activities	43
8. Musical interest	
To play an instrument with friends	8
To play an instrument alone	9
To sing in a choir	20

6.6.1 Step-wise multiple regression analysis of the interest variables as predictors

The eight interest factors received through the factor analysis were predictors in a step-wise multiple regression analysis with the three linguistic indices as criterion variables. The item scores in each predictor were summed after conversion into standard scores.

Table 6.17 *Step-Wise Multiple Regression Analyses between the Linguistic Variables as Criteria and Eight Interest Factors as Predictors*

Criterion	Predictor (Number in Brackets)	Multiple Regression *R*	Prop Explained Variance $R^2 \cdot 100$	*DF*	*F* Value
Index I	Musical(8)	.27	07	1/118	9.49^{++}
	Verbal prod(5)	.33	11	2/117	7.17^{++}
	Construction(1)	.35	13	3/116	5.62^{++}
	Club activities(7)	.36	14	4/115	4.54^{++}
	Esthetical(2)	.38	14	5/114	3.83^{++}
	Collectings(6)	.38	14	6/113	3.28^{++}
	Sports(4)	.39	15	7/112	2.80^{+}
Index II	Verbal prod(5)	.20	02	1/118	4.90^{+}
	Musical(8)	.25	07	2/117	4.08^{+}
	Esthetical(2)	.29	08	3/116	3.44^{+}
	Club activities(7)	.29	08	4/115	2.64^{+}
	Collectings(6)	.29	08	5/114	2.11
	Sports(4)	.29	08	6/113	1.75
	Relations(3)	.29	08	7/112	1.49
Index III	Verbal prod(5)	.20	04	1/118	4.65^{+}
	Construction(1)	.28	08	2/117	4.98^{++}
	Collectings(6)	.30	09	3/116	3.95^{+}
	Musical(8)	.32	10	4/115	3.34^{+}
	Relations(3)	.33	11	5/114	2.86^{+}
	Esthetical(2)	.34	12	5/113	2.47^{+}
	Sports(4)	.34	12	7/112	2.12^{+}
	Club activities(7)	.34	12	8/111	1.88
Index I+II+III	Verbal prod(5)	.27	08	1/118	9.57^{++}
	Musical(8)	.33	11	2/117	7.51^{++}
	Collectings(6)	.34	12	3/116	5.30^{++}
	Club activities(7)	.35	13	4/115	4.17^{++}
	Construction(1)	.36	13	5/114	3.45^{++}
	Relations(3)	.36	13	6/113	2.91^{+}
	Sports(4)	.36	14	7/112	2.51^{+}
	Esthetical(2)	.37	14	8/111	2.18^{+}

Note: For criterion indices I and II predictors Nos. 3 and 1 respectively are removed because of the small F value in entering the final step.

+ = Level of significance 5 per cent
++ = Level of significance 1 per cent

Significant values at 1 per cent level were received for six predictors, for the criterion variable Index I and for the first five predictors of the combined Index I+II+III. With the exception of Index III, interest in verbal production and music are the best predictors of the ones examined.

As in earlier analyses presented in this chapter and in Chapter 5 the relationship between predictors and criteria is low. (See Table 6.18)

Table 6.18 *Correlation Matrix between Criteria and Predictors, Means and Standard Deviations*

Variable	Mean	*SD*	2	3	4	5	6	7	8	9	10	11	12
Construction	1.87	.86	-.09	.05	.36^{++}	-.08	.24	.02	-.01	.15	.2	.18^{+}	.02
Esthetical	1.83	.60		.15	-.15	.32^{++}	.16^{+}	.17^{+}	.35^{++}	.24^{++}	-.01	.12	.15
Relations	2.90	.64			.05	.23^{++}	.05	.02	.16^{+}	.07	.05	-.01	.04
Sports	2.94	1.08				-.10	.17^{+}	.15	-.03	-.05	.02	.07	.02
Verbal prod	2.19	.69					.20^{+}	.05	.22^{++}	.24^{++}	.20^{+}	.20^{+}	.27^{++}
Collectings	2.72	.70						.16^{+}	.17^{+}	.00	.03	-.02	.00
Club activ	2.01	.86							.27^{++}	.16^{+}	.09	.07	.13
Music	1.81	.94								.27^{++}	.20^{+}	.14	.25^{++}
Index I	49.89	7.87									.40^{++}	.41^{++}	.78^{++}
Index II	49.98	7.59										.37^{++}	.75^{++}
Index III	49.74	8.70											.78^{++}
Index I+II+III	50.03	6.20											

$N = 120$ + = $p < .05$ for $r \leq .16$

++ = $p < .01$ for $r \leq .25$

From the correlation matrix it can be seen that interest in verbal production and interest in music receive the highest correlations both with criterion variables and with other predictors.

Svensson (1971) reports similar relationships between verbal interests and scholastic achievement. There is no great difference between the connection between the relationship of the three indices to the interest factors. Possibly one could point to the fact that Index III, Creative Ability, is best predicted by the factors Verbal Production and Construction. The fact that the Construction factor receives a prominent position as a Creative Ability is particularly easy to understand.

6.7 Summary

In this chapter the study of 1972 has been presented. Linguistic, socio-economic and interest variables have been analysed according to the following.

1. Formation of three indices for quantitative, qualitative and creative linguistic ability based on content analysis and data from a factor analysis.

2. Use of the indices as criterion variables in step-wise multiple regression analysis, where socio-economic variables, intelligence and certain school achievement variables were used as predictors.

3. Factor analysis of a study of interests.

4. Formation of seven groups of interest variables, which were used as predictors in step-wise multiple regression analysis.

Chapter 7

CHANGE IN LINGUISTIC ABILITY DEPENDING ON SOCIAL INFLUENCES

7.1 Introduction

If one assumes that the linguistic ability develops at the same rate in all children, but at different levels, which would be dependent on genetic conditions, the rank and relative distance of linguistic abilities for the individuals would be constant. It is easy to see that this is not the case. Linguistic ability is influenced by forces in the environment in the same way as other abilities. This is self-evident. The problem becomes more interesting if one suspects that certain individuals improve less in ability than others due to circumstances around them. This relative decrease, called the cumulative deficit, has previously been discussed in this thesis. In this chapter I would like to shed light on this cumulative deficit using the data collected at the two points of measure in 1963 and 1972.

The problem can be described as follows. Assume that we are studying the linguistic ability of two children who, at the age of six, seem to have the same ability. After nine years of school it can be expected that the linguistic ability of the two children differs. The child who, according to fortunate circumstances, has received a positive influence will have a clearly greater linguistic ability than the other child, who has not received any positive influence. This would mean that a child with little positive influence will experience a relative decrease in linguistic ability compared to the situation at the age of six. If this were the case one could suspect that school not only favours the child from a "rich" environment, but also has a negative effect on the relative position of the child from a "poor" environment.

In order to specify the problem I would like to describe three different cases, where one group of children (A) comes from a favourable environment and another group (B) from an unfavourable one. The semantic content of the terms "favourable" and "unfavourable" here agrees with common sense, i.e. "favourable" means social group I or II, good parental education, rich stimulation at home etc., and "unfavourable" means the opposite. Let us further assume that we have instruments that can measure the absolute, true linguistic ability. This would then be transferred to a scale where achievement at different times could be marked off on a unit scale giving relative measures.

I would like to illustrate my problem with three possible cases, seen in the figures below. It is assumed that the two groups A and B are studied on two different occasions, in 1963 and in 1972.

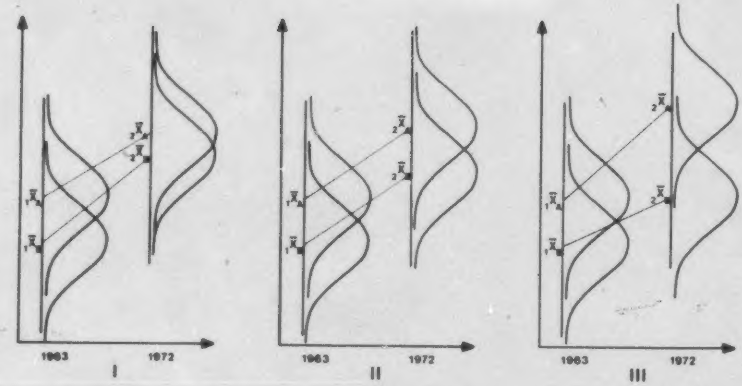


Figure 7.1 *Possible Changes in Linguistic Performance Depending on Outer Factors*

The following denotations will be used: ${}_1\bar{X}_A$ is the arithmetic mean of the scores of group A, measured in 1963, and ${}_2\bar{X}_A$ is the mean of the scores on the latter occasion, in 1972. Similarly ${}_1\bar{X}_B$ denotes the mean of the scores of group B in 1963 and ${}_2\bar{X}_B$ the mean of the scores in 1972. In case I the difference found in 1963 decreases i.e. $({}_1\bar{X}_A - {}_1\bar{X}_B) > ({}_2\bar{X}_A - {}_2\bar{X}_B)$. In case II the lines between the means in 1963 and 1972 become parallel, i.e. the differences are the same on the two occasions: $({}_1\bar{X}_A - {}_1\bar{X}_B) = ({}_2\bar{X}_A - {}_2\bar{X}_B)$. Case III illustrates the situation when the gap between the means is greater in 1972 than in 1963 i.e. $({}_1\bar{X}_A - {}_1\bar{X}_B) < ({}_2\bar{X}_A - {}_2\bar{X}_B)$.

I find case I improbable because I believe that the difference found in 1963 is partly due to socio-economic factors. Then it is hard to believe that group A, living in a favourable environment, should improve less than group B, living in an unfavourable one. Not even the most ardent advocate of the importance of heritage, e.g. Arthur Jensen (1973) would take this for granted. Cases II and III are based on more acceptable assumptions.

This chapter gives an account of the comparisons made between the linguistic ability in 1963 and in 1972 and its main purpose is shedding light on changes in performance related to socio-economic factors in 1972.

7.2 Method and model

It is extremely difficult to study the level of achievement on two occasions with the ambition of making comparisons between these. In order to succeedone should use exactly the same instruments on the two occasions and be convinced that the instruments measure the same functions. The instruments I have used to measure linguistic ability in 1963 and in 1972 are similar, but not entirely identical. The set of instruments is also larger in 1972 than in 1963. There is, therefore, a certain risk that two partly different functions are being compared. I will recur to this in the discussion of the results of my studies.

In order to reduce the risk somewhat, I have based my comparisons on two methods for calculating standard scores with different combinations of variables from the two occasions.

A. A comparison based on factor scores. - On the basis of the factor analyses carried out using data from 1963 and 1972, respectively, three indices were constructed: A, B and C, and I, II and III. (See Chapters 5 and 6.) The comparison reported below is based on factors 1, 2 and 3 in the former case and factors 1, 2 and 8 in the latter, and the following method was used.

On each occasion and for each individual the factor score was computed for each factor and added together, and the mean was computed. This gave mean factor scores $X_{fs\ 63}$ and $X_{fs\ 72}$ for the individuals. The means for all individuals were computed, and the mean factor score in 1963 was subtracted from the one in 1972 and a difference was found:

$$\overline{X}_{d(fs)} = \overline{X}_{fs\ 72} - \overline{X}_{fs\ 63}$$

where $\overline{X}_{d(fs)}$ is the difference based on the mean factor scores in 1972 and 1963. It will be named a mean difference (factor) score and the difference $X_{d(fs)} = X_{fs\ 72} - X_{fs\ 63}$ will be named a difference score.

The method has the advantage that the scores are weighted. There are several pitfalls, however. As was pointed out in Chapters 5 and 6, some of the variables used in the analyses were linearly dependent, extracted from the same test. Another difficulty is the fact that a factor score is based on all variables in the factor, i.e. undesired influences may appear. This is not normally a great problem, however, for in most cases a variable with a high loading on a factor contributes much more to the factor score than one with a low loading.

In order to check the factor scores based on the variables behind the Indices A+B+C in 1963 and the Indices I+II+III in 1972, I have also calculted indices based on raw scores in the variables which constituted the indices (see Chapter 5 and 6) for each subject. When the two types of scores were compared it was found that they were almost identical. This has been proved by means of comparisons of t-values from the two types for the same groups ($r = .93$).

B. A comparison based on test scores for comparable variables. - In calculating the Indices A+B+C and I+II+III, certain variables were included which differed between 1963 and 1972. To create a comparison with as many similar variables as possible, I selected those which were the same on the two occasions and arrived at two groups, one containing variables measuring qualitative linguistic performance and the other variables measuring quantitative linguistic performance. The two groups are shown in Table 7.1.

Table 7.1 *Qualitative and Quantitative Variables in 1963 and 1972*

	Variable in 1963	Variable in 1972
Qualitative	Definition	Verbal comprehension
	Recognition	Recognition
	Raven	WIT
Quantitative	Number of Words	Number of Words
	Nouns	Nouns
	Adjectives	Adjectives
	Verbs	Verbs
	Content Analysis	Marks for Essay
	Polysyllabics	Polysyllabics

For each variable mentioned in the table, the standard score was computed for each individual and converted to so-called T-points ($T = 50 + zx\ 10$). The average for the variables in each group (qualitative and quantitative) and for all the individuals was computed on each occasion. In this way I received two difference scores: $\bar{X}_{d(z)qual}$ and $\bar{X}_{d(z)quant}$, where $\bar{X}_{d(z)qual}$ is the difference between the means of the qualitative linguistic variables in 1972 and 1963 and $\bar{X}_{d(z)quant}$ is the difference between the mean of the quantitative linguistic variables in 1972 and 1963.

There is a difference between the two studies that should be noticed: In the first case (A) one difference score was computed, in the second (B) two difference scores were extracted. In order to make my comparisons of difference scores comparable to the previous step-wise multiple regression analyses, reported in Chapters 5 and 6, I placed the main stress on differences calculated on the basis of factor scores.

7.3 Description of difference scores, $\bar{X}_{d(fs)}$

Table 7.2 *Description of the Difference Score,* $\bar{X}_{d(fs)}$ *in Terms of Means and Standard Deviations in Sub-Groups*

	Ss Born in 1957		Ss Born in 1958		Ss Born in 1959		All Subjects	
	B	G	B	G	B	G	B	G
Mean	-.264	.304	-.103	.138	-.251	.111	-.208	.206
SD	1.222	.975	1.132	1.230	1.063	.781	1.119	1.003
N	20	25	25	17	19	14	64	56

57 of the subjects showed better results in 1972 than in 1963 and 63 less satisfactory results.

Table 7.3 *Increase and Decrease in Factor Scores in 1972 Compared to Those in 1963 for Sub-Groups*

	Increase in $\bar{X}_{d(fs)}$ in 1972		Decrease in $\bar{X}_{d(fs)}$ in 1972	
	N	Per Cent	*N*	Per Cent
Boys born in 57	8	40.0	12	60.0
Girls born in 57	16	64.0	9	36.0
Boys born in 58	11	44.0	14	56.0
Girls born in 58	8	47.1	9	52.9
Boys born in 59/60	6	31.6	13	64.4
Girls born in 59/60	8	57.1	6	42.9

The largest and the smallest differences have been investigated through an analysis of the values lying more than 1 standard deviation above or below the means for each group. The calculations have been made for the two groups "all boys" and "all girls".

Table 7.4 *Number of Subjects Who Differ by more than one Standard Deviation from the Mean for the Sub-Groups*

Years of Birth	Boys		Girls	
	$\bar{X}+SD=.911$	$\bar{X}-SD=-1.327$	$\bar{X}+SD=1.209$	$\bar{X}-SD=-.797$
1957	4	5	5	3
1958	2	2	4	3
1959/60	1	2	2	2
Total	7	9	11	8

7.3.1 Differences between social groups

In the following we will look at differences between social groups pertaining to differences in factor scores. As I have shown earlier, in Chapters 5 and 6, social group is a comparatively weak predictor of linguistic ability. The stepwise multiple regression analyses showed that the influence on linguistic performance was greater in 1963 than in 1972.

Through the method presented in this chapter it is possible to compare each individual's achievement on the two occasions in the form of differences between the factor scores in 1963 and in 1972. The differences between social groups are shown in Table 7.5.

Table 7.5 *Means and Standard Deviations of the Difference Factor Scores for All Subjects and for the Sub-Groups, and t-test of Difference between Social Groups I+II and III*

Subject	Social group I+II			Social group III			Difference I+II-III	t value	p
	$\bar{x}_{d(fs)}$	SD	N	$\bar{x}_{d(fs)}$	SD	N			
All 120 Ss	.103	1.148	81	-.261	.894	39	.364	1.743	$.02<p<.05$
Boys N=64	-.073	1.212	43	-.486	.859	21	.413	1.397	$.05<p<.10$
Girls N=65	.303	1.051	38	.001	.886	18	.302	1.052	$.10<p<.20$
Ss born 1957 N=45	.186	1.178	32	-.280	.903	13	.466	1.278	$.10<p<.20$
Ss born 1958 N=42	.041	1.268	25	-.071	1.018	17	.112	.296	$.30<p<.40$
Ss born 1959 /60 N=33	.058	1.012	24	-.513	.672	9	.571	1.560	$.05<p<.10$

No individual difference is clearly significant, taken in isolation. It ought to be noticed that the two sex groups are independent of each other, and so are the age groups. All the differences point in the same direction. The multiplicative law of probabilities can be applied, and the results show that the differences between groups are significant at the 5 per cent level for all sub-groups together.

There is a clear trend showing that children from social groups I and II develop much more positively in linguistic ability, than children from social group III. The differences are shown in Figure 7.2.

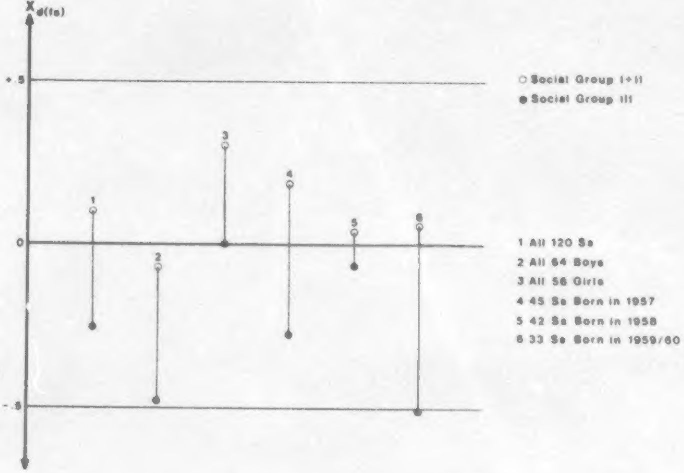


Figure 7.2 *Relative Change from 1963 to 1972 in Respect of Level of Linguistic Ability for Social Groups*

7.3.2 Differences related to level of education

In Chapters 5 and 6 I have shown that the education of the parents is a somewhat better predictor of the child's linguistic ability than social group. It may therefore be expected that those children whose parents have a high education should show a relative increase in linguistic ability in 1972. This is also the case, and the differences between high and low education groups are marked. A presentation of the comparisons is made in Table 7.6.

High education is defined by:

1. Diploma from lower secondary school (in Swedish: "Realskola")or corresponding
2. Entrance examination to college (in Swedish: "Studentexamen") or
3. Academic degree

Low education is defined by:

1. Elementary school (in Swedish: "Folkskola") or
2. Elementary school plus professional school (in Swedish: "Folkskola" plus "Yrkesskola")

Table 7.6 *Means and Standard Deviations of the Difference Factor Scores for All Subjects and for the Sub-Groups. t test of Differences between High and Low Educational Background of the Parents*

Father's education	High Education (H)			Low Education (L)			Diff	*t*	
Subjects	$\bar{X}$	*SD*	*N*	$\bar{X}$	*SD*	*N*	*H-L*	value	*p*
All 120 Ss	.321	1.184	46	-.224	.964	74	.545	2.757	$.001 < p < .01$
Boys *N*=64	.173	1.235	20	-.382	1.031	44	.555	1.873	$.03 < p < .05$
Girls *N*=56	.435	1.154	26	.007	.821	30	.428	1.618	$.03 < p < .05$
Ss born 1957 *N*=45	.579	1.110	19	-.334	.969	26	.913	2.933	$.001 < p < .010$
Ss born 1958 *N*=42	.460	1.531	14	-.243	.860	27	.703	1.893	$.03 < p < .05$
Ss born 1959 /60 *N*=33	-.205	.665	13	-.028	1.118	20	-.177	.515	$.30 < p < .40$
Mother's education									
All 120 Ss	.251	1.175	48	-.193	.985	72	.444	2.235	$.01 < p < .03$
Boys *N*=64	.123	1.124	24	-.407	1.081	40	.530	1.873	$.03 < p < .05$
Girls *N*=56	.379	1.233	24	.076	.756	32	.303	1.118	$.20 < p < .30$
Ss born 1957 *N*=45	.295	1.236	18	-.111	1.019	27	.406	1.201	$.20 < p < .30$
Ss born 1958 *N*=42	.493	1.464	16	-.320	.807	25	.813	2.294	$.01 < p < .03$
Ss born 1959 /60 *N*=33	-.083	.567	14	-.108	1.182	19	.025	.075	$.40 < p$

From the comparisons, shown in Table 7.6, I have found that children whose parents have a high education develop more in linguistic ability than children whose parents have a low education. An exception may be made for subjects born in 1959/60, who receive a small increase in difference scores. With this exception the tendency is evident. Both the father's and the mother's level of education influence the linguistic ability. This means that, after 1963, the linguistic ability increases for those children whose parents have a high education, but decreases relatively for those children whose parents have a low education. Figure 7.3 shows this trend clearly.

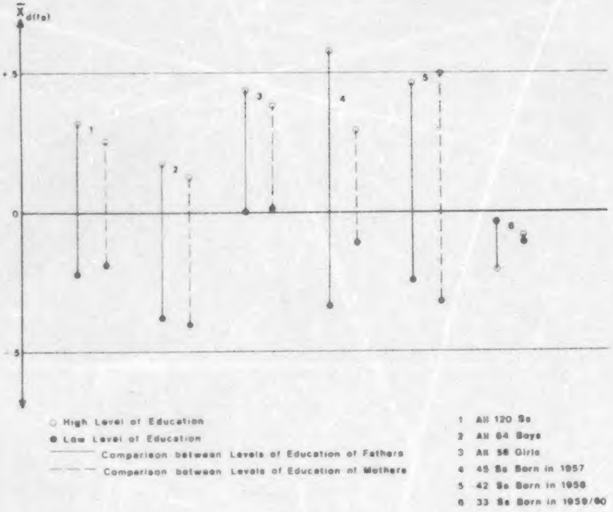


Figure 7.3 *Relative Change from 1963 to 1972 in Respect of Linguistic Ability for Groups defined by the Educational Level of the Parents*

7.3.3 Differences between boys and girls

As has been shown in Table 7.3 the girls received a positive increase in all age groups in the comparison between factor scores in 1972 and those in 1963, whereas the boys in all age groups showed deficit in the same comparison. These results are interesting as they indicate that girls benefitted more from the influence of school than boys. I would therefore like to take a closer look at the sex differences in respect of difference in factor scores between 1972 and 1963.

Table 7.7 *Means and Standard Deviation of the Difference Factor Scores for Boys and Girls. All Ss and the Sub-Groups. t-test between Boys and Girls*

Subjects		Boys			Girls		Diff.	*t*	*p*
	$\bar{X}$	*SD*	*N*	$\bar{X}$	*SD*	*N*	B-G	value	
All 120 Ss	-.208	1.119	64	.206	1.003	56	-.414	2.12	$.01 < p < .03$
Ss born 1957	-.264	1.222	20	.304	.975	25	-.568	1.74	$.03 < p < .05$
Ss born 1958	-.103	1.132	24	.138	1.230	17	-.241	.65	$.20 < p < .30$
Ss born 1959/60	-.251	1.063	19	.111	.781	14	-.362	1.08	$.10 < p < .20$

The difference between boys and girls is shown in the figure below.

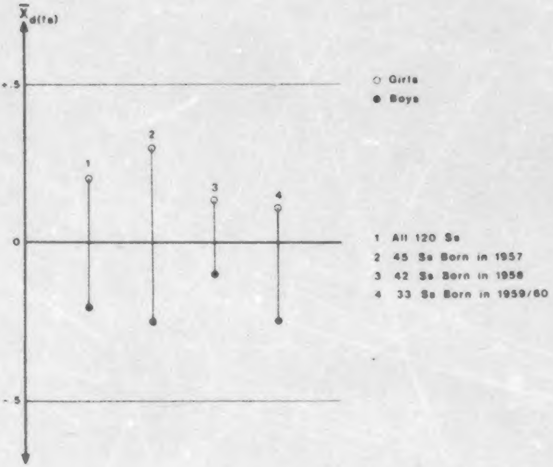


Figure 7.4 *Relative Change from 1963 to 1972 in Respect of Level of Linguistic Ability for Boys and Girls*

The deviations in factor scores differences between boys and girls point clearly in one direction. They are significant for the groups together ($p < .01$). As has been shown earlier, the difference in factor scores has been calculated by subtracting the mean factor scores in 1963 from the mean factor scores in 1972. A positive value indicates that the subject has a higher value in 1972 than in 1963, and has therefore improved his linguistic ability relatively. The number of subjects in the four possible cases is shown in the fourfield table below.

Table 7.8 *Four-Field Tables for the Different Cases of Changing Factor Scores between 1963 and 1972*

Boys

		Mean factor score 1972		
		Above zero	Below zero	Total
Meanfactor score 1963	Above zero	12	14	20
	Below zero	9	29	35
	Total	21	43	64

Ø = .27

Girls

		Mean factor score 1972		
		Above zero	Below zero	Total
Meanfactor score 1963	Above zero	24	5	29
	Below zero	10	17	27
	Total	34	22	56

Ø = .47

The correlation between 1963 and 1972 in respect of linguistic performance is higher for girls than for boys. If the correlations are calculated using the raw difference scores the corresponding coefficients are $r_{boys} = .19$ and $r_{girls} = .35$. The two coefficients are not significantly different. Girls increase their linguistic ability more than boys between 1963 and 1972.

7.4 Description of difference scores based on standard scores

As mentioned in the introduction to this chapter (section 7.2) another type of difference scores was also computed. The average of the standard scores were computed for variables 1963 and 1972 which are comparable. In this way two index scores were computed for each individual on each occasion, viz. one for qualitative linguistic ability (the sum for the variables: Definition, Recognition and Raven in 1963, and Verbal comprehension, Recognition and WIT in 1972), and one for quantitative linguistic ability (the sum for the variables: Number of Words, Nouns, Adjectives, Content analysis and Polysyllabics in 1963, and Number of Words, Nouns, Adjectives, Marks for Essay and Polysyllabics in 1972). By substracting the individual score in 1963 from the one in 1972 a difference score was obtained. Differences between groups in respect of this difference score were obtained. The trend is the same as the one shown in the previous section. With regard to changes of linguistic ability between 1963 and 1972, subjects belonging to high socio-economic strata show a greater and a more rapid increase than subjects belonging to low socioeconomic strata. This is shown in Tables 7.9 and 7.10.

Table 7.9 *The Differences between High and Low Socio-Economic Strata based on Difference Scores between Qualitative Linguistic Ability in 1963 and in 1972. Means and t values*

Criterion	Groups Compared	Means	*t*	*p*
Qualitative linguistic ability	All Subjects:			
	Social group I+II	.7284		
	Social group III	-1.2564	1.20	$.10<p<.20$
	Boys:			
	Social group I+II	2.1163		
	Social group III	-.4286	1.35	$.05<p<.10$
	Girls:			
	Social group I+II	-.8421		
	Social group III	-2.2222	.49	$.30<p<.40$
	All Subjects:			
	Father's educ. High	1.3696		
	Father's educ. Low	-.7162	1.31	$.05<p<.10$
	Boys:			
	Father's educ. High	4.6000		
	Father's educ. Low	-.2273	2.63	$.001<p<.01$
	Girls:			
	Father's educ. High	-1.1154		
	Father's educ. Low	-1.4333	.12	$p>.40$
	All Subjects:			
	Mother's educ. High	1.6458		
	Mother's educ. Low	-.9583	1.66	$.02<p<.05$
	Boys:			
	Mother's educ. High	3.9583		
	Mother's educ. Low	-.3250	2.41	$.001\ p<.01$
	Girls:			
	Mother's educ. High	-.6667		
	Mother's educ. Low	-1.7500	.41	$.30\ p>.40$

Table 7.10 *The Difference between High and Low Socio-Economic Strata Based on Difference Scores between Quantitative Linguistic Ability in 1963 and in 1972. Means and t values*

Criterion	Groups Compared	Means	t	p
Quantitative linguistic ability	All Subjects:			
	Social group I+II	.8025		
	Social group III	-2.1026	1.72	$.03<p<.05$
	Boys:			
	Social group I+II	.0698		
	Social group III	-3.2381	1.54	$.05<p<.10$
	Girls:			
	Social group I+II	1.6316		
	Social group III	-.7778	.98	$.10<p<.20$
	All Subjects:			
	Father's educ. High	2.1304		
	Father's educ. Low	-1.5541	2.29	$.01<p<.03$
	Boys:			
	Father's educ. High	2.1000		
	Father's educ. Low	-2.4318	2.12	$.01<p<.03$
	Girls:			
	Father's educ. High	2.1538		
	Father's educ. Low	-.2667	.97	$.10<p<.20$
	All Subjects:			
	Mother's educ. High	.3333		
	Mother's educ. Low	-.4583	.49	$.30<p<.40$
	Boys:			
	Mother's educ. High	.7917		
	Mother's educ. Low	-2.1000	1.38	$.05<p<.10$
	Girls:			
	Mother's educ. High	-.7917		
	Mother's educ. Low	1.5937	-.68	$.20<p<.30$

Tables 7.9 and 7.10 show the same trend as the results in section 7.3. Only in one case is the *t*-value negative (mother's education and quantitative linguistic ability). Even if only a few *t*-values are significant at the 5 per cent level, the differences have the same direction as those found when the differences were computed on the basis of factor scores for the three indices. The gap in linguistic ability between the two socio-economic levels is greater for boys in all combinations than for girls.

7.5 What is the cause of the differences?

Whether or not the differences between the socio-economic groups are described by means of difference factor score or mean difference standard score, the trend is the same. Children from social group I+II, and children whose parents are well educated increase more in verbal ability between 1963 and 1972, than children from social group III and children whose parents are less well educated. The obtained differences may be due to one of the three causes mentioned below.

7.5.1 Possible causes

A. The difference is due to the fact that the tests in 1963 and in 1972 have different reliability. That is to say, the difference could depend on the greater reliability of the tests of 1972 than of those of 1963.

B. The tests in 1963 and the tests in 1972 have different content. The difference between the socio-economic groups would in that case be due to the fact that the 1972 tests favoured the subjects from social group I+II or subjects whose parents are well educated.

C. The difference depends on the existing real divergence in regard to the verbal development between socio-economic groups.

7.5.2 Discussion

In order to try to verify if there are differences in the reliability between the 1963 and the 1972 tests, I have chosen to estimate the homogeneity of the tests included in the qualitative index calculated on the basis of standard scores (see section 7.2B). This homogeneity is estimated by the Kuder-Richardson formula 21. This formula gives as a reliability measure a lower-limit value of the reliability. The coefficients determined by KR20 and KR21 often turn out almost identical, however. (See Cronbach, 1960, p. 141; and Eriksson, 1975, p. 22-23). The formula KR21 is previously discussed in Chapter 6, Section 6.5. The reliability is presented in Table 7.11 below.

Table 7.11 *The Reliability of the Test in the Qualitative Indices in 1963 and 1972*

Variable in 1963	KR21	Variable in 1972	KR21
Definition	.88	Verbal comprehension	.85
Recognition	.89	Recognition	.89
Raven	.71	WIT	.74

Table 7.11 above shows that the reliability is almost identical for the three variables. The obtained differences between the socio-economic groups are therefore probably not due to differences in reliability between the two occasions. In this case I have exemplified using the qualitative index. This index has given the largest differences between the different socio-economic groups.

Explanation B (see 7.5.1) is more difficult to negate with. The tests used have, however, consisted of such tests as are generally occurring in school. Consequently the standard tests of Swedish language resemble the language tests used in the present investigation. In fact, my tests, like instruments used by the school to measure linguistic ability, favour children who belong to a high socio-economic group. When language ability is defined as the results on tests given by the school and when the language tests used in this investigation do not differ from the tests given at school, the differences between social groups probably show a difference in the linguistic ability determined by the school.

With this argumentation the explanation C becomes utterly important. The question may be: Is the estimation of the linguistic ability, made by the school, an estimation of the real linguistic ability? This dissertation cannot give an answer to that question. No unambiguous definition of linguistic ability exists. My linguistic tests measure certain parts of the linguistic ability framed in the Swedish school system. I will by this statement emphasize that I have used the same instruments as are used by the school itself. These instruments are evidently not sufficient in giving a complete picture of linguistic ability. But as one of my aims is to study linguistic ability during a period of the children's life when the school is expected to be influential, it is reasonable that I use tests that are similar to the evaluating instruments used by this school.

7.6 Comments and summary

7.6.1 Comments

During the time between the two data collections in 1963 and 1972, the subjects included in the study spent between six and eight years at school. One asks oneself: In what way has the school influenced the linguistic ability? The changes I have been able to show in this chapter point unambiguously to the fact that the privileged subjects have been influenced positively, while those belonging to a low social group, or having parents with a low education have been influenced to a less satisfactory degree by the school. It is, of course, possible to object to this reasoning by saying that it is not only the school which has influenced the individuals during the nine school years. It would be naive to think that the school in itself could eliminate differences having to do with socio-economic circumstances. I feel that it is perfectly clear, that the school has failed to develop sufficiently the linguistic ability of the underprivileged, as seen from the results presented in this chapter.

The results show that the deepening of the gap in linguistic ability, which appears in the 1972 data, is due to socio-economic factors. On p.161 in this chapter three figures, the validity of which for my material has now been tested, were presented. The result shows that the figure indicating acceleration for the child from the more socio-economically stimulated environment, and stagnation for the child from the less satisfactory environment, has been proved valid.

This fact is remarkable and ought to become a subject for discussions of measures to lessen the gap in linguistic ability which appears through outside influences. Note that when I, in this context, speak about a gap between groups, I don't mean the gap brought about by early influences, i.e. influences from birth. I speak about the situation for those individuals who, from a certain point in time, in our material 4 - 6 1/2 years, either increase or decrease relatively in linguistic ability. In Chapter 10 I will discuss more closely what possibilities school and society have of changing the development shown in this study.

A further result, which ought to be commented upon, is the development of boys against girls. Generally, time and influence from school, has favoured girls, but not boys. This difference can be explained in two ways. Either girls have a different development in linguistic ability than boys, or girls meet an environment that influences them more. Even if one can find that girls have better results than boys in certain linguistic factors, such as fluency, this is an example of absolute differences. In my study I have compared every individual on two occasions, and I am interested in the relative difference in linguistic ability. That girls tend to improve their linguistic ability relatively with increasing age, can hardly have to do with an inner genetic mechanism separating girls from boys in linguistic ability. The explanation is partly that the school favours girls against boys, and partly that girls, because of existing sex roles to a greater degree adapt to the demands of the school. Through this double adaptation, the girls will develop more in linguistic ability than the boys, relatively. In my study I have used conventional tests for measuring linguistic ability that is evaluated in today's school. This difference between boys and girls ought to lead to a situation where girls, through the education which, *de facto* favours them linguistically, should be able to outclass boys in the higher educational apparatus or in economic sectors or committees, where linguistic ability is valued highly. This is not the case, because sex roles can also have a dampening effect on girls and women.

7.6.2 Summary

This chapter sheds light on differences in linguistic ability between 1963 and 1972. The main method used has been to compare factor scores in 1972 with factor scores in 1963 in respect of linguistic ability. A higher average factor score in 1972 than in 1963 means that the subject has increased his linguistic ability in comparison with other subjects. If a lower factor score appears in 1972 than in 1963 the linguistic ability has decreased. Different groups, formed on the basis of socio-economic criteria, have been compared.

The results can be summarized in the following points:

i. Subjects from social group I and II increase more than subjects from social group III in linguistic ability between 1963 and 1972. The differences, which are apparent in all ages are significant at the 5 per cent level.

ii. Subjects whose fathers have a high education experience increase significantly in linguistic ability between 1963 and 1972.

iii. Subjects whose mothers have a high education increase in linguistic ability between 1963 and 1972.

iv. The influences from socio-economic factors are greater on boys than on girls.

Chapter 8

A NEW WAY OF STUDYING LINGUISTIC ABILITY. PRESENTATION OF A PILOT STUDY USING THE "MAMBA" METHOD.

8.1 Introduction

The ways of studying language development, which have been described so far, are rather traditional. These methods have, however, certain defects: they give only a superficial picture of linguistic ability and competence. To get a less rigid picture of the language used not only in writing but also in daily speech, the linguistic structure must be analysed. This can be done by means of an analysis of sentence structure, a method created by Professor Ulf Teleman, Denmark, (MAMBA,1974). The abbreviation MAMBA stands for "Manual för meningsbyggnadsanalys", i.e. Manual for Sentence Structure Analysis. The method was created when more subtle measurements of fixed linguistic characteristics were searched for within the project Skrivsyntax (Swedish for "Syntax of the Written Language"), School of Education, Malmö. The method provides a way of examining the complexity (concentration) topology (disposition), specification, modality and sentence relation of a text.

A simple measure of grammatical *complexity* is the number of words per sentence or "macrosyntagm" as well as the complexity of the sentence, the number of words in the sub-clauses, or in the finite sentences. Here it must be noticed that the contractions have of course been treated as complete sentences. The complexity of the words can also be calculated, which is done by studying the number of morphemes in the lexical stem, the proportions of compound and derived words, or still simpler, by measuring the average length of the words expressed as number of syllables or letters.

Complexity is often the same as concentration. From a syntactic point of view concentration is achieved through a more complex sentence structure, with sub-clauses and contractions. However, nominalizations are also expressions of linguistic concentration.

By the term *topology* or disposition of a text, Teleman refers to arrangement of the parts of the sentence. One can, for example, investigate how many sentences there are that consist of a finite verb, a temporal adverbial and a subject. After that, this type of sentence can be divided into sub-categories with reference to the varying order in which the parts of the sentence occur.

Specification is defined by Teleman as the degree of completeness and fullness of the text under study. The simplest measure is the length of the text, e.g. the number of words in the text. The prerequisite is naturally that the texts compared treat the same subject and that they are written under similar conditions as, for example, in the material of the project "Skrivsyntax" (Syntax of the Written Language, standardized tests of Swedish for the third year of the upper secondary school, the gymnasium). In grammatical analysis, a specification should appear in the frequency of non-necessary sentence parts describing qualities and circumstances: the proportions of adjectival attributes, predicates, temporal adverbials, adverbials of location and other "heavy" adverbials (except preposition adverbials which hold the same status as the objects).

The dimension *modality* refers mainly to the way the writer marks the degree of probability of his statement. According to Teleman, three types of words are used in particular: adverbs like probably, reasonably, surely; auxiliary verbs like may, can, must (the latter in their so-called epistemic meaning); verbs which precede that-clauses, e.g. think, believe, know. It is probably not the frequency of adverbials expressing the attitude of the speaker that distinguishes people but the type of tnese adverbials. Here we are reminded of the distinction made by the Bernstein school between egocentric and socio-centric expressions: "I presume" and "you know". The verbs can be devided according to their subject: 1st person, 2nd person, 3rd person (one).

By *sentence-relation* is meant the transmitter's marking of the connection between clauses and sentences.

8.2 The aim of the pilot study and its analysis model

The purpose of the sentence structure analysis is, on one hand, to obtain new information about the construction of language - an information which can be related to other linguistic criteria or to various factors of influence - on the other hand to test the applicability of the method. If this method reveals that certain specified qualities of language are typical for various educational levels or social groups, then it could be a basis for remedial programmes for verbally handicapped individuals.

In its present state the MAMBA (Manual for Sentence Structure Analysis) is not yet worked on, or tested sufficiently, to be used as a diagnostic instrument. I have tested the MAMBA in order to study some aspects of the sentence structure in relation to linguistic tests and background variables. The treatment of a text in accordance with the MAMBA takes a lot of time and requires a sure linguistic intuition on the part of the analyser. The treatments of text, carried through so far within the SOSP project by fil kand Anna-Britta Dahlén, cover for 40 subjects more than 600 record sheets. As the object only has been to examine whether the MAMBA is at all applicable and can be developed into a diagnostic instrument, we have confined ourselves to the treatment of written statements only, derived from subjects born in 1958. The texts analysed, consists of the written statements derived from the Picture Test in 1972.

In this thesis I have included some of the syntactic constituents, obtained from analyses, according to the MAMBA, which in the data processing were approximately normally distributed. I then had them processed quantitatively, i.e. the frequency of each element was entered into data matrices. In the appendix a description of the procedure for linguistic analyses with the MAMBA is found. As the examples deal with Swedish utterances which translated into English no longer will be lexically and syntactically congruous with the original, the description in the appendix will only be rendered in Swedish. (The description is taken from the SOSP report No 3, Dahlén, 1974.) In my quantitative analysis of syntactical elements, 61 variables were included. These are also reproduced in the appendix. In order not to burden this report with a detailed account of the various steps taken during the arduous analysis, I will present a brief summary of my analyses below:

A. Determination of which syntactical elements ought to be included in the qualitative analysis. This determination was based on an examination of the record sheets and was carried out together with Dahlén who previously performed the notations.

B. Frequency distributions of the 61 variables are included in the study.

C. Statistical treatment involving a comparison of the means in the different variables for boys and girls respectively. Factor analyses have been carried out for boys and girls. As there were no significant differences between the sexes on the different variables and as the two factor analyses yielded almost identical outcomes, the division into sexes has been disposed of and a new factor analysis has been carried out for the 40 subjects. This factor analysis will in the text be referred to as "factor analysis I".

(Note! 42 subjects were included in the age group of individuals born in 1958. As a consequence of difficulties with the transcription for two of the subjects, these two were omitted in the analysis.)

D. As most variables had a skewed distribution and often were dichotomous so that one category obtained 0 markings and the other 1, we sorted out some of the variables.

E. After this sorting out of variables, there remained 34 of the original 61 variables, and these 34 together with 7 other linguistic variables and WIT were included in a new factor analysis (factor analysis II). The seven linguistic variables were as follows: Anagram, Word Fluency, Verbal Comprehension, Recognition, Right Answer in Cloze Test, Index of Readability and Essay Marks. The first four rotated factors account for approximately 60 per cent of the total variance with the eigenvalues: 15.6, 3.6, 2.9 and 2.7.

F. The following sentence and clause variables were selected on the basis of the factor analyses for further treatment: 1) the total number of macrosyntagms, 2) the number of declarative sentences, 3) the number of relative clauses and 4) depth coefficients 1 and 2.

8.3 The contents of the variables

The sentence variables studied will be more closely described below.

The macrosyntagm (MS) is the notation of the MAMBA for clause or sentence - with a more precise meaning, however, than the usual concepts of clause and of sentence. Loman and Jörgensen (1971, p. 18) give the following definition:

> "By a macrosyntagm (here abbreviated to MS) is meant a sequence of words with a maximum range with respect to the syntactic relations between its constituent units. The units of a macrosyntagm are thus included in a system of syntactic relations (parataxis and hyper- and hypotaxis). As examples of macrosyntagms can be mentioned sentence (here abbreviated M = mening) or sentence fragment. Sentence fragment is a syntactically isolated sequence, which does not resemble a sentence but which nevertheless is united by an internal system of syntactic relations.Other instances of macrosyntagms are macrosyntagms of interjection (IMS) and macrosyntagms of address (TMS)."

Declarative sentences are types of macrosyntagms. Other macrosyntagms are interrogatives, imperatives, exclamations, phrases of address and phrases of interjections.

The relative clauses begin with the pronoun "som". This "som" can be omitted in the text. When so happens "dummies" are used in the notations.

The depth coefficients signify the level of the qualifyers in the sentence. This implies that it is possible by means of dummies to read off how deeply embedded a subordinate clause is in the syntactic structure. The depth is marked with numbers ranging from 0 to 9. In my data there were only few instances of the depth coefficients ranging from four to nine.

8.4 Relations between sentence variables and linguistic criteria

The relations between these five syntactic variables and the seven linguistic variables + WIT which were included in the factor analysis are accounted for in Table 8.1 in the form of correlation coefficients, factor loadings and factor numbers.

Table 8.1 *Correlation between the MAMBA Variables and the Seven Linguistic Variables plus WIT (Intelligence)*

MAMBA Variable	Factor Loading and No		WIT	Word Fluency	Definition	Recognition	Cloze	LIX	Essay Marks
Macrosyntagm	.51^{+}	4	.25	.06	.20	.28	.16	.17	.55^{++}
Declarative Sentence	.50	4	.31	.15	.34	.26	.14	.23	.55^{++}
Relative Clause	.53	1	.40^{++}	.12	.14	.19	.11	.36^{+}	.56^{++}
Depth Coefficient 1.	.30	8	.25	.23	.30^{+}	.33^{+}	.17	.26	.61^{++}
.	.35	1	.51^{++}	.22	.34^{+}	.37^{+}	.29	.51^{++}	.61^{++}

DF = 38 + = $p<.05$ for $r \leq .33$

++ = $p<.01$ for $r \leq .42$

The correlations between the sentence variables and Essay Marks are significant and relatively high.

As all the MAMBA variables are quantitative in my analyses (i.e. the number of macrosyntagms etc has been noted), the high correlation with Essay Marks reflects the well-known fact that Essay Marks to a large extent are based on the quantity of what is written.

Depth Coefficient 2, DP2, correlates highly with WIT, LIX and Essay Marks. This is plausible, as the Depth Coefficient denotes the level of the qualifiers. The higher the Depth Coefficient, the more numerous the qualifiers.

In order to get an idea of the relationships between the sentence variables as well as the relationships between these and the criterion variables I studied the relations between 8 sentence variables and 7 criterion variables.

The correlation matrix in Table 8.2 comprises the following variables:

1. MS Tot = the Total Number of Macrosyntagms
2. MS Decl = Declarative Macrosyntagms
3. RC = Relative Clauses
4. DP 1 = Depth Coefficient 1
5. DP 2 = Depth Coefficient 2
6. DP 3 = Depth Coefficient 3
7. US 1000 = Subordinate Clauses of the First Degree
8. US 1100 = Clauses of the Second Degree; i e Subclause to Subordinate Clause 1000
9. WIT
10. Anagram
11. Word Fluency
12. Verbal Comprehension
13. Recognition
14. Cloze Test
15. LIX (Readability Index)
16. Essay Marks

Table 8.2 *Relations between Eight Sentence Variables, Intelligence and Seven Other Linguistic Variables*

1.MS Tot	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2.MS Decl	.93^{++}														
3.RC	.56^{++}	.60^{++}													
4.DP 1	.71^{++}	.66^{++}	.52^{++}												
5.DP 2	.57^{++}	.56^{++}	.84^{++}												
6.DP 3	.34^{+}	.45^{++}	.65^{++}	.49^{++}	.47^{++}										
7.US 1000	.28	.28	.23	.51^{++}	.21	.24									
8.US 1100	.55^{++}	.29	.72^{++}	.65^{++}	.72^{++}	.76^{++}	.28								
9.WIT	.25	.31	.40^{++}	.26	.51	.40^{+}	.11	.48^{++}							
10.Anagram	-.06	.01	.16	.04	.38	.27	-.03	.29	.55^{++}						
11.Word Fluency	.20 .20	.15 .15	.12 .12	.24 .24	.22 .22	.22 .22	-.06 -.06	.27 .27	.38^{+} .38^{+}	.35^{+} .35^{+}					
12.Verbal Comprehension	.37	.34^{+}	.14	.30	.34^{+}	.21	.17	.29	.64^{++}	.43^{++}	.50^{++}				
13.Recognition	.28	.26	.19	.34^{+}	.37^{+}	.15	.06	.29	.52^{++}	.26	.49^{++}	.69^{++}			
14.Cloze Test	.16	.14	.11	.17	.29	.19	.17	.27	.64^{++}	.30	.33^{+}	.77^{++}	.41^{++}		
15.LIX	.17	.23	.36^{+}	.26	.51^{++}	.32	.16	.42^{+}	.34^{+}	.33^{+}	.48^{++}	.28	.19	.38^{+}	
16.Essay Marks	.55^{++}	.55^{++}	.56^{++}	.61^{++}	.61^{++}	.46^{++}	.28	.59^{++}	.41^{+}	.17	.20	.44^{++}	-.37^{+}	.29	.45^{++}

DF = 38

+ = $p < .05$ for $r \leq .33$

++ = $p < .01$ for $r \leq .42$

The sentence variables which correlate at a maximum with WIT and the other linguistic variables are the Relative Clauses (3 RC), the Depth Coefficients 2 and 3 (5 DP 2, 6 DP 3) and the Subclauses of the Second Degree with the notation 1100 (8 US 1100).

Within the project "Skrivsyntax" (Swedish for Syntax of the Written Language, School of Education, Malmö, 1974) high correlations between Relative Clause and Essay Marks have been found. In my investigation the relation between Relative Clause and Essay Marks was .56.

8.5 Sentence variables and socio-economic status

The relations between the sentence variables and socio-economic status have also been studied. Each of the variables Social Group, Father's Education and Mother's Education has been divided into high group and low group according to the criteria described in Chapter 7. In the following table the results of *t*-tests concerning the mean differences between the high and the low group in each variable are presented.

Table 8.3 *t Test for Higher and Lower Socio-Eecnomic background in the Sentence Variables*

Variable	Social Group High-Low, t	Father's Education High-Low, t	Mother's Education High-Low, t
MS Tot	1.38	2.49^{++}	1.09
MS Decl	.88	2.34^{+}	1.44
RC	- .13	1.25	.67
DP 1	1.84	2.62^{++}	2.04^{+}
DP 2	- .32	2.20^{+}	1.17
DP 3	.41	2.16^{+}	2.17^{+}
US 1000	- .32	.68	.40
US 1100	- .79	1.81	1.98

$N = 40$ + = Level of significance 5 per cent
++ = Level of significance 1 per cent

The tendency of differences in the sentence variables is most pronounced for the background variable of the father's educational level. The number of macrosyntagms and the number of qualifiers as indicated by the depth coefficients are correlated with the educational level of the parents. Social group affiliation does not differentiate with respect to the frequency of sentence variables. The number of degrees of freedom is in Table 8.3 38, which requires t values of 2.02 and 2.42 at the 5 per cent and at the 2 per cent level of significance, respectively.

8.6 The relations of some syntactical elements to other linguistic variables and to WIT

I have picked out six syntactic elements from the two factor analyses carried out, in order to examine more closely the correlation between these and six other variables, which in this case may function as criterion variables.

The principle of selection has been:

a) The syntactical element must be included with a maximum loading among the three first factors in Factor Analysis I.

b) The syntactical element shall in Factor Analysis II be grouped with the other variables, which in Factor Analysis I fall within the same factor.

Example: If variables 3, 6 and 9 obtained the highest values in Factor I (Analysis I) and the variables 3 and 6 obtained the highest values in Factor III (Analysis II) and variable 9 in Factor IV (Analysis II) then the variables 3 and 6 were to be included.

Note! Factor Analysis I included all the 61 variables extracted in the Sentence Structure Analysis. Factor Analysis II included 42 variables out of which 8 did not belong to the Sentence Structure Analysis.

Table 8.4 *Syntactical Elements with High Loadings in the First Factors of Factor Analysis I*

Syntactical Elements	Factor Analysis I[1]			Factor Analysis II[1]		
	Fact. No.	Load	Var[1]	Fact. No.	Load	Var[1]
1.Adverbial of Location RA/RB S1	I	.49	.31	IV	.73	.80
2.Predicative Complement of Subject SP, S1	II	.81	.40	IV	.84	.59
3.Adverbial of time TA/TB, S1	II	.79	.40	IV	.80	.59
4.Preposed Adjectival Attribute AT/AU, S2	III	.76	.47	I	.70	.37
5.Preposed Definite Attribute DT/DU, S2	III	.57	.47	I	.31	.37
6.Adverbial of Location R/RB, S2	I	.53	.31	IX	.83	.80

Note[1] Cumulative prop of total variance. The identifications from the manual are used. S1 represents the basic level where the primary syntactical elements have been noted. Syntactical elements, which are qualifiers are placed in S2.

As criterion variables I have selected:

a) WIT (Intelligence)
b) Verbal Comprehension
c) Recognition
d) Cloze Test
e) Index of Readability
f) Essay Marks

Table 8.5 *Correlations between six Syntactical Elements and six Criteria*

Syntactical Elements	Criteria					
	a) WIT	b) Verbal Comprehension	c) Recognition	d) Cloze Test	e) Index of Readability	f) Essay Marks
1. RA/RB, S1	$.33^{+}$	.24	−.07	$.35^{+}$	$.37^{+}$	$.39^{++}$
2. SP, S1	$.33^{+}$	$.31^{+}$	$.30^{+}$	.18	−.12	.18
3. TA/TB, S1	$.35^{+}$	$.36^{+}$	$.30^{+}$	.24	$.37^{+}$	$.39^{++}$
4. AT/AU, S2	$.28^{+}$	.25	.20	.24	$.41^{++}$	$.39^{++}$
5. DT/DT, S2	$.29^{+}$	.21	.15	$.27^{+}$	.25	$.44^{++}$
6. RA/RB, S2	.23	.21	−.02	.12	.16	$.31^{+}$

DF = 38 + = $p<.05$ for $r \leq .33$
++ = $p<.05$ for $r \leq .42$

The correlations obtained are moderate. The highest correlations are obtained for those including Intelligence (WIT) or Essay Marks. The significant correlations between Adverbials of Location (RA/RB), Adverbials of Time (TA/TB), Preposed Adjectival Attribute (AT/AU), Preposed Definite Attribute (DT/DU), and the criterion variable Essay Marks may probably be explained by the fact that these syntactical elements contribute to making the text more detailed and it is this quality which has been positively judged. As an example Preposed Definite Attribute (DT/DU) may be taken, which contributes to making the context more detailed and more precise. The definite attributes consist of adjectival attributes, e.g. present participles and superlatives, modal adjectives, temporal adjectives and classifying adjectives (Teleman, 1974, pp 155-156). Example: De traditionella tretton miljonerna förslog inte. (Transl. The customary thirteen millions did not suffice). "Tretton" ("thirteen") which represents a specification has here been classified as a preposed definite attribute.

8.7 Syntactical elements and socio-economic status

The relationship between syntactical elements and socio-economic status has also been studied. In the table below *t* tests for differences between high and low groups in terms of Social Group, Father's Education and Mother's Education are reported.

Table 8.6 *t Test for Higher and Lower Socio-Economic Background Related to Syntactical Elements*

Variable	Social Group High-Low, *t*	Father's Education High-Low, *t*	Mother's Education High-Low, *t*
RA/RB, S1	-.62	-1.11	-1.26
SP, S1	-2.27^{+}	.41	- .11
TA/TB, S1	.42	1.34	2.01
AT/AU, S2	.57	.30	.48
DT/DU, S2	-.56	1.55	1.01
RA/RB, S2	-.21	1.93	1.65

N = 40 + = Level of significance 5 per cent

The table is difficult to interpret. The only significant *t* value (5 per cent) is obtained for SP, i.e.predicative complement of subject, on comparisons of Social Groups. The predicative complement of subject which is governed by such ordinary verbs as: be, become, seem and look like, consists of adjectives, participles or nominal phrases. A high frequency of predicative complements can be said to signify a simple language with short and ordinary sentences like e.g.: the ball is round, that's very good, he is stupid, he becomes angry, etc.

8.8 Sentence structure and influences

In a multiple step-wise regression analysis different elements derived from the sentence structure analysis constituted criterion variables and intelligence (WIT), Social Group, Father's Education and Mother's Education were the predictors.

Among the predictors which were obtained in the final step of the analysis, only the first one was generally significant at a 5 per cent level of significance. In Table 8.7 I have shown the ranking order of the predictors and the multiple correlation coefficients for the sets of predictors being significant at the 5 per cent level of significance.

Table 8.7 *Step-Wise Multiple Regression Analysis with Sentences, Depth Coefficients and Syntactical Elements, as Criterion Variables and Intelligence (WIT), Social Group and Parental Educational Background as Predictors*

Criterion	Ranking Order: Predictors	R	R^2.100	F Value	DF
MS_{Tot}	3-2-4-1	.36 .39	13 15	5.75 3.10	1/38 2/37
MS_{Decl}	3-1-2-4	.37 .41	13 17	5.91 3.72	1/38 2/37
RC	1-2-4-3	.40 .41	16 17	7.03 3.76	1/38 2/37
DP 1	4-1-3-2	.38 .40	14 16	5.35 3.50	1/38 2/37
DP 2	1-2-3-4	.52 .55 .57 .57	27 30 33 33	13.71 7.79 5.79 4.27	1/38 2/37 3/36 4/35
DP 3	1-4-2-3	.41 .47 .48	16 22 23	7.45 5.44 3.59	1/38 2/37 3/36
SP	1-4-3-2	.33	11	4.59	1/38
RA/RB,S1	3-1-4-2	.52 .54 .54 .54	27 29 29 29	13.77 7.49 4.89 3.58	1/38 2/37 3/36 4/35
RA/RB,S2	3-4-2-1	.44 .48 .49 .49	19 23 24 24	9.13 5.41 3.85 2.81	1/38 2/37 3/36 4/35
TA/TB,S1	1-2-3-4	.35 .40	12 16	5.42 3.57	1/38 2/37
TA/TB,S2	1-3-4-2	No significant differences			

Criterion Variables:

MS_{Tot}	Macrosyntagms
MS_{Decl}	Declarative Sentences
RC	Relative Clauses
DP 1 - DP 3	The Level of Depth in Sentences
SP	Predicative Complement of Subject
RA/RB, S1	Adverbial of Location on Syntactical Level 1
RA/RB, S2	Adverbial of Location on Syntactical Level 2
TA/TB, S1	Adverbial of Time on Syntactical Level 1
TA/TB, S2	Adverbial of Time on Syntactical Level 2

Predictors:

No 1	Intelligence, WIT
No 2	Social Group
No 3	Father's Educational Background
No 4	Mother's Educational Background

The table is difficult to interpret. The placing of the variable of intelligence is to be noted. In the earlier multiple regression analyses, where the linguistic indices constituted criterion variables, WIT was the best predictor for all the indices with the exception of Index 1. In Table 8.7, it appears that the frequency of Macrosyntagms and Adverbials of Location are best predicted by the Father's Education.

Table 8.8 *Correlation between Four Predictors and Macrosyntagms/Adverbials*

Criterion	WIT(1)	Social Group(2)	Father's Educ (3)	Mother's Educ (4)
Macrosyntagms total MS_{Tot}	.25	.09	$.36^{++}$	$.33^{++}$
Declarative Sentences MS_{Decl}	$.31^{+}$	.07	$.37^{+}$	$.35^{+}$
Adverbial of Location S1 RA/RB,S1	$.33^{+}$	.26	$.52^{++}$	$.33^{+}$
Adverbial of Location S2 RA/RB,S2	.23	.15	$.44^{++}$	$.43^{++}$

DF = 38   + = $p<.05$ *for* $r \leq .33$

++ = $p<.01$ *for* $r \leq .42$

As verbal production is an essential indicator of what is generally characterized as linguistic ability, the results obtained by means of the multiple regression analysis indicate the importance of the educational background - in this case of the father. I want to interpret this as follows: The language which is used contextually, i.e. used in order to describe an event or in order to exert an influence, is, to a great extent, determined by the influence exerted in the home, directly or indirectly, through the parental educational level.

(Note! The term contextual I want to contrast to artificial. Artificial or non-contextual data are e g vocabulary tests.)

8.9 Some viewpoints on the MAMBA as a method of analysis for language

The account of a pilot study of sentence structure analysis given in this thesis has aimed at giving a general information on the method and at relating different syntactical elements identified according to the MAMBA to other linguistic criteria.

As,according to the MAMBA, sentence structure analysis covers all syntactical as well as lexical components of language, the method may probably successfully be used in order to diagnose verbal deprivation. The advantage of the MAMBA over other linguistic diagnostic methods lies in the great variety of information that it gives us.

I imagine that the method could be used for a number of purposes like making a diagnosis of the linguistic level obtained by e.g. immigrants or verbally deprived individuals. As a result of the information being precise in the sense that every spoken utterance is definable, it might be possible to build up special training programmes based on MAMBA analysis; these training programmes could then be designed so that they, in particular, concerned those parts of language being least developed according to the analysis. The MAMBA might also be used as a factor influencing the official language. With official language I mean the language used in public announcements, instructions and official reports. This language is considered as complicated and difficult of access. By means of a MAMBA analysis it would be possible to establish the distinguishing characteristics of the official language. If it were possible to influence those in power so that they would avoid the sentence structures, which, according to the analysis, deviate from ordinary prose, the official language might become easier to understand, and hence the individual might get a chance to participate more actively in decision-making by being able to form an opinion of the proposals and decisions published. The MAMBA might also be used for analysis of scientific theses, which generally are characterized by a specialized academic style of language, thereby causing that some really important results obtained do not reach the groups for whom they were intended. The sentence structure analysis introduced by Teleman (1974) is an important innovation within pure linguistics as well as within the disciplines concerned with language in society, i.e. sociolinguistics and linguistic education.

Chapter 9

A SUMMING-UP

9.1 Introduction

The results of this thesis may seem fairly disparate in content and for this reason I am going to use this chapter for a summing-up of the results of my studies in 1963 and 1972.

If I were to repeat the 1963 study today, the aim and methods would be different. This is not only due to the fact that there are more sophisticated methods and working models in existence today but also to the fact that society of today looks differently and that the individual's possibilities of managing physically and mentally have been questioned to an ever increasing extent. In 1963 social issues did not seem very relevant to my research. When the study in 1972 was planned I had a clearer idea of my purpose: I wanted to describe, explain and lend advice and assistance concerning verbal deprivation, i e to present ways of remedying the situation within the prevailing educational system. Since the planning of the study was made at the beginning of the 70's, much has happened within education which has come to affect my approach. The rôle of school has been questioned by Christie (1972) and Illich (1972). An alternative pedagogy, based on dialogue and not on mediation, has been developed by, above all, Freire (1972) and Dale (1972). Bronfenbrenner (1971) has critically analysed different methods of education based on values in different societal systems. Bernstein and a few other sociolinguists have carried out critical analyses of language and society (see Chapter 1). In Sweden educational deprivation has been elucidated by Husén (1969) and Emanuelsson (1975). Critical analyses of education and training have been presented by Köhler (1973) and Levin et al (1972). In the so-called IMFO studies the social reality of minority groups has been described using hermaneutic methods. (IMFO = Invandrar- och Minoritetsforskning, i.e. Research on Immigrants and Minority Groups). Examples of the work of the IMFO group are found in Ödman (1971), Westin (1973) and Trankell (1973). This enumeration might be continued at some length. As an active educator I have been strongly influenced by these new ideas within education, where the aim is no longer to adapt the individual to the established society but to change this so that it meets the needs of the individual. From having accepted a socio-liberally benevolent attitude towards improvements on behalf of the so-called deprived individuals, I have started to breed an ever increasing scepticism concerning the possibilities of the present society to grasp and improve conditions for socially deprived individuals. Above all I have become convinced of the fact that remedial programmes without any social reforms may contribute to widening the gaps between people.

The purpose of this thesis which, to a great extent, deals with verbal deprivation, is, ultimately, to add a small building stone to the huge complex being built in order to create greater educational equality. In carrying out the study I found many more problems than I expected at the beginning of my work, thus a great many questions remain unanswered. Hence, I hope that sociolinguistic research in Sweden will develop so that new studies using more sophisticated methods than those I have applied may give an answer to all the remaining questions, whether explicitly formulated or only vaguely outlined.

9.2 The aim of the summaries

The summaries, which follow below, aim at recapitulating the results relevant to the discussion. In a summary of this kind certain data will be treated in greater detail than others. This is natural, for the aim is to form a basis for a discussion about changes. More controversial results will thus automatically grow particularly interesting even if the results do not meet requirements for statistical significance.

9.3 The literature survey

In Chapters 1-3, I have given a survey of sociolinguistics as it has been developed up to the present. After having introduced various definitions I discuss, in Chapter I, the influence of society on the development of so-called linguistic codes. A great deal of space is devoted to the concept of cumulative deficit. The empirical part of this thesis is partly centered round this problem. In order to remedy the negative effects of this deficit, various types of programmes of measures have been presented. These programmes are discussed and evaluated. Chapter 2 deals, to some extent, with psychological theories of development and influence and to some extent with the linguistic aspect   advocated by Chomsky. Space is also devoted to the dispute between behaviouristic and mentalistic views of the development of language.

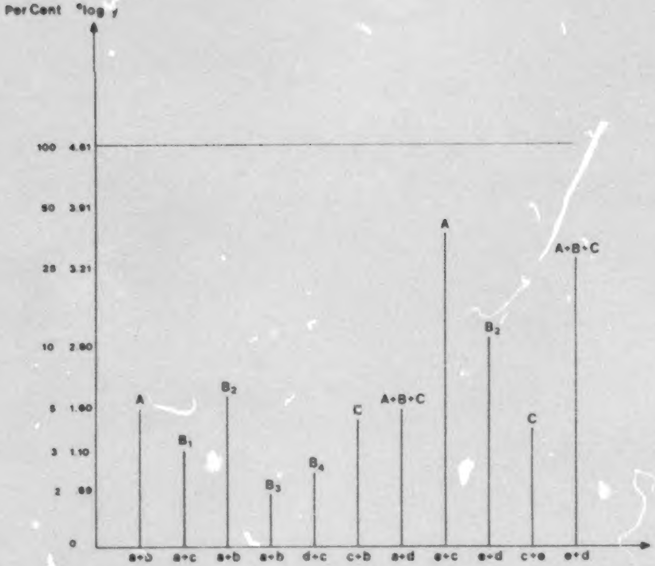
Chapter 3 presents an examination of various opinions about measures taken to improve the conditions of socially deprived individuals and includes a discussion of the socio-liberal versus the Marxist ideology. As a basis for my further work I have tried to make a synthesis, including socio-liberal and Marxist programmes of action.

Briefly, this synthesis involves measures taken on two fronts: The conditions of the individuals, as well as the basis for judging these individuals, could be changed. To some extent this means accepting a different outlook on society, accompanied by a new education and also by a greater concentration upon measures of support applied at early stages.

9.4 The 1963 study

The results having to do with linguistic variables viewed in isolation are not reported below. For a further description of the tests used, I would like to refer to Chapter 4, to the appendix, and to my licentiate's thesis (Erasmie, 1964). To be able to study the influence of various external factors on linguistic ability, step-wise multiple regression analyses were carried out, where three linguistic indices constituted criterion variables, and where socio-economic factors and intelligence, measured by means of Raven's progressive matrices, were predictors. The three indices were obtained by means of content analysis, bringing together tests which logically seemed to belong together. As a support for the forming of the indices a factor analysis was carried out with respect to the linguistic variables. The indices expressed quantitative linguistic ability (A), qualitative linguistic ability (B) and the ability to use adjectives (C). (This last mentioned index was included in order to study Bernstein's hypothesis of the frequent use of adjectives in the elaborated code.)

The explained variances, i.e. the possibility of the various predictors to describe the results on the criterion variables, were rather limited. I believe that this is due to the fact that socio-economic factors have not had time to influence language to a great extent during the period of age from zero to six years, as language still is in the course of formation during this period. Figure 9.1 shows the variance of the two predictors which were selected first in the step-wise multiple regression analyses.



The Indices

A = Quantitative Linguistic Ability
B = Qualitative " "
B_1 = Qualitative Linguistic Ability, incl. Raven
B_2 = Qualitative Linguistic Ability, excl. Raven
B_3 = Qualitative Linguistic Ability, incl. Raven, excl. DAM
B_4 = Qualitative Linguistic Ability, excl. Raven and DAM
C = Number of Adjectives

The Predictors

a = Social Group
b = Income
c = Father's Educational Background
d = Mother's Educational Background
e = Raven (Intelligence)

Figure 9.1 *The Explained Variance of the First and the Second Predictor for the Three Linguistic Indices in 1963. The Y-Axis Indicates the Variance in Per Cent in the Natural Logarithm Scale. Over the Lines the Index Identification, below the Lines the Predictor Identification*

Figure 9.1 shows that the variance explained by the predictors increases markedly when the intelligence test Raven is included among the predictors. This result might be interpreted as an indication of the great importance of inherited intelligence with respect to linguistic ability. This interpretation cannot be considered proved, for my study goes back only to the age of four for my subjects. It cannot provide any information about what happened earlier in the child's development. In the combinations where the intelligence variable is included among the criteria, defined as scores on the Raven intelligence test, social group becomes the predictor explaining the greatest variance out of the socio-economic factors included in the equation. A plausible interpretation of Raven's indisputable dominance as a predictor, might be that intelligence (here, operationally defined by means of an intelligence test) may to a great extent have developed as a result of the influence from socio-economic factors acting earlier in the life of the child.

9.4.1 Can socio-economic circumstances during the preschool age constitute predictors of linguistic ability in the upper grades of the comprehensive school?

By means of the step-wise multiple regression analysis, where the predictors of the 1963 study were included to explain the linguistic ability in 1972 it was demonstrated that the ranking among the predictors was the same as when the predictors of 1972 were included. If the criterion variable variance explained by the predictors in 1963 is compared in 1963 as well as in 1972, one finds that this variance increases in 1972.

The socio-economic factors in 1963 thus constituted better predictors of the linguistic ability in 1972 than in 1963. (This relationship can be compared with the results of Chapter 7, which displayed increased differences in linguistic ability between social groups.) Social group and the educational backgrounds of the parents during the child's preschool years can thus be used as predictors of linguistic ability for the upper level of the comprehensive school. This is partly due to high correlations between socio-economic status in 1963 and 1972.

9.5 Predictors of linguistic ability of students in the upper level of the comprehensive school

In Chapter 6 the results from the 1972 study were reported. In this section I want to sum up the results of the step-wise multiple regression analyses carried out, in which different variables, e.g. social background, school marks and interests, were included as predictors of linguistic ability in 1972, expressed by means of three indices: quantitative (I), qualitative (II) and creative (III).

9.5.1 School marks and socio-economic factors as predictors of linguistic ability

The results of the analyses showed that marks for Swedish in the sixth grade were, on the whole, the best predictor of linguistic ability, defined by the three indices. Marks for Swedish given in the sixth grade and the educational level of the father explained together 40 per cent of the variance for the three indices combined. There were differences between the various indices. Thus marks for Swedish given in the sixth grade, together with marks for Mathematics given in the third grade, explain 61 per cent of the total variance with respect to Index II, i.e. qualitative linguistic ability, Index III, which measures creative linguistic ability, is best predicted by marks for Mathematics given in the sixth grade

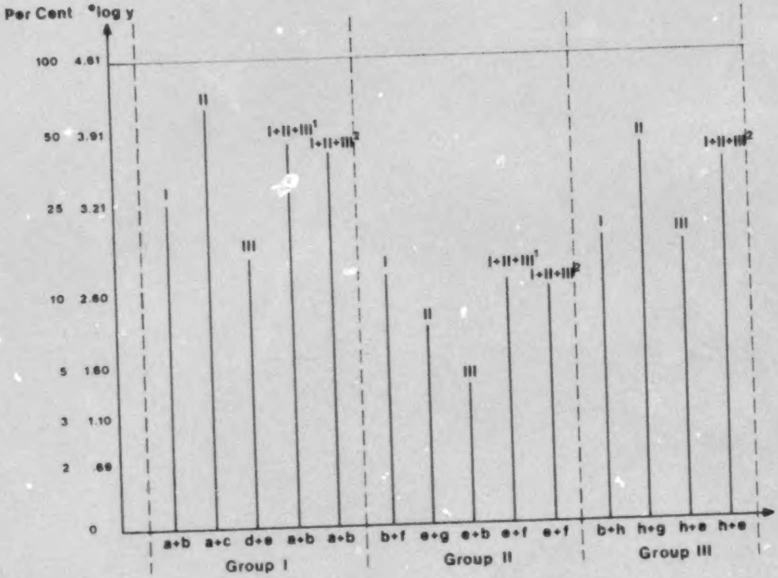
As the indices measure capacities similar to the ones which are trained at school, it is not very remarkable that marks for Swedish and Mathematics are comparatively good predictors.

In the analyses, where only two socio-economic variables were included as predictors, two types of treatments were carried out. In one socio-economic factors only were included, in the other socio-economic variables and intelligence (defined as scores on the WIT Test) were included.

In the first case it is the mother's education in combination with social group which give the best prediction of linguistic ability for the combined indices. They explain 11 per cent of the total variance. In the other case intelligence and the mother's education are the best predictors. The results are not unambiguous but are similar to those which Husén (1969) found when he studied possible predictors of education.

> "It was found that the data which gave the best predictions were: test scores, social background data, teacher ratings of intelligence and age relative to grade."
>
> (Husén, 1969, p. 117)

By test scores Husén means the results of Hallgren's intelligence test. The results from the step-wise multiple regression analyses for three groups of predictors are reported in Figure 9.2.



The Indices

I = Quantitative Linguistic Ability
II = Qualitative Linguistic Ability
III = Creative Ability
I+II+III = The Three Indices, incl. WIT
I+II+III = The Three Indices, excl. WIT

The Predictors Group I = 10 Predictors (School and Socio-Economic)
II = 4 Predictors (Socio-Economic)
III = 5 Predictors (Socio-Economic and WIT)

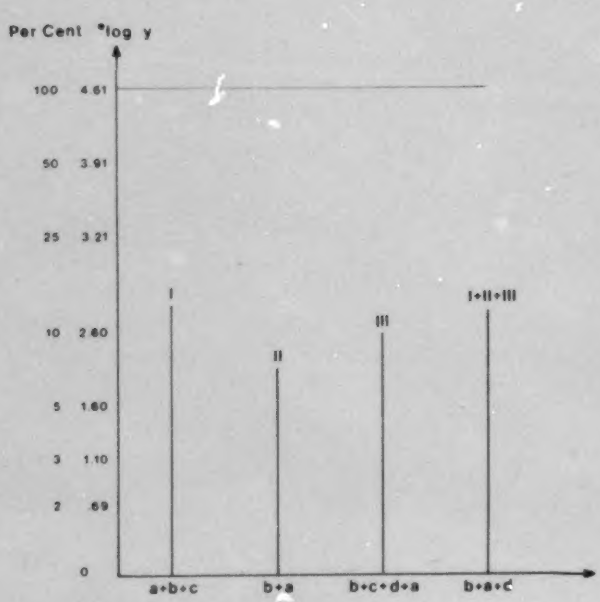
a = Marks for Swedish, Grade 6
b = Father's Educational Background
c = Marks for Mathematics, Grade 3
d = Marks for Mathematics, Grade 6
e = Mother's Educational Background
f = Social Group
g = Income
h = WIT (Intelligence)

Figure 9.2 *The Explained Variance of the First and the Second Predictor for the Three Linguistic Indices in 1972. The Y-Axis Indicates the Variance in Per Cent in the Natural Logarithm Scale. Over the Lines the Index Identification, below the Lines the Predictor Identification*

9.5.2 Interest variables as predictors of linguistic ability

Interests in various activities were examined by an inventory. The 62 items included were treated by factor analysis. Eight factors, which could be determined, have then been included in step-wise multiple regression analyses. Interests could explain 14 per cent of the variance of linguistic ability, which should be compared to the variance explained by marks plus socio-economic background, amounting to 37 per cent. Not unexpectedly, interest in verbal production constituted the best predictor. The second best predictor, included in all combinations, with the exception of that of creative linguistic ability (Index III), was interest in music.

In Figure 9.3 the results including those predictors which explain at least 80 per cent of the total variance obtained in the analysis are presented.



The Indices
I = Quantative Linguistic Ability
II = Qualitative Linguistic Ability
III = Creative Ability

The Predictors
a = Musical Interest
b = Interest for Verbal Production
c = Interest for Construction
d = Interest for Collectings

Figure 9.3 *The Explained Variance of the Tested Interest Predictors for Linguistic Ability. The Y-Axis Indicates the Variance in Per Cent in the Natural Logarithm Scale. Over the Lines the Index Identification, below the Lines the Predictor Identification*

9.6 Changes in linguistic ability

In Chapter 7 the linguistic ability in 1963 has been compared with the linguistic ability in 1972. Two comparisons were made: (1) Factor scores were obtained for all individuals in the three factors on which the three indices were built, and an average for each individual in 1963 and in 1972 was computed. The difference between the factor scores on these two occasions was calculated. (2) A quantitative and a qualitative linguistic measure was obtained in 1963 and in 1972 by computing the sums of the standard scores in the tests which were comparable on the two occasions. The difference between the occasions was computed.

The results agreeingly point to a superior linguistic ability in the children who come from a higher social group or have well-educated parents. Children who originate from social group III or whose parents have an education of short duration show an inferior development of linguistic ability between 1963 and 1972.

There is a marked sex difference with respect to the change of linguistic ability from 1963 to 1972. On the whole, the linguistic ability of girls is improved more than that of the boys. This may be interpreted as an effect of the greater adaptability to the requirements of the school on the part of the girls. We may thus preliminarily assume that girls profit more from the school teaching than boys do.

9.7 The MAMBA method of analysis of sentence structure

In Chapter 8 a method for the study of sentence structure is presented. It is called the MAMBA Method, i.e. the Manual of Sentence Structure Analysis, according to the manual published by Teleman (1974). The analysis was carried out on 40 written statements derived from the age group of 1958. Different types of sentences, clauses and syntactical elements have been examined. The correlations between various syntactical elements and other linguistic criteria and intelligence are positive. In the comparisons made between social categories defined by the educational backgrounds of the parents, it appears that subjects with higher socio-economic standard will obtain higher values in the variables which were considered more qualitative. (My results are well in accordance with Holmlund's results (1974). Holmlund's study included 28 children from the age of 8 to 9. In a dichotomization of working class children versus children of university graduates, she was able to state that the latter used more complex macrosyntagms than the former. As a method of analysis, Holmlund used the manual worked out by Loman and Jörgensen (1971). This manual, which is a predecessor to the MAMBA, deals with the macrosyntagms only.)

In Chapter 8 I try to evaluate the MAMBA as a method for diagnosing verbal deprivation.

Chapter 10

DISCUSSION

10.1 Introduction

In the first three chapters of this thesis I presented various sociolinguistic schools and different types of models of measures used for the benefit of verbally deprived individuals. In the six following chapters I have elucidated verbal deprivation in relation to social group or educational background. In this chapter I want to look upon my results as part of a greater whole - viz. related to that which is defined by the over-all goals and prospects of school - and to discuss various means of bringing about changes advantageous to children who, for socio-economic reasons, fail at school. Even if my studies include only certain parts of the development of language and thus do not throw light upon success and failure at school, in general, I am still of the opinion, that my results, despite their limited scope, are relevant for such a discussion. As we know, all school teaching is based on linguistic ability, and the verbally deprived individual will not only be disabled in the markedly verbal subjects, but the deprivation will affect his whole educational situation (Summer and Warburton, 1972, Bernstein, 1971, Loman, 1974).

In this chapter, I will also comment on a few of the documents governing the general pre-primary school and the comprehensive school. The concept of socio-cultural deprivation will be discussed on the basis of a report submitted to The Council of Europe (Information Bulletin, 1974:1) as well as on the basis of a few studies directly dedicated to the study of educational deprivation. In the last section of the chapter I will discuss a few possible changes which have been suggested to reduce the educational deprivation due to language.

10.2 The aim and direction of the Swedish general pre-primary school

Malmquist (1973) points out that the research of recent years har provided strong arguments for the view that the experience and knowledge, acquired by the child during the first years of life, essentially affect its chances to develop its inherent potential. He argues for an adequate preschool training of children from a so-called under-privileged homes. Such a compensatory view is typical of the official approach to the objects of the general pre-primary school. But this compensatory outlook is somewhat different from the traditional compensatory ideology which maintains that measures of support alone would be enough to remedy a social deprivation. In the Hellström Report (SOU 1972:26) two out of three of the cognitive and affective goals of school have a clear socio-educational meaning.

> "The general pre-primary school shall, together with the parents, seek to create the best opportunities for the child to develop its affective and cognitive potential.
>
> The general pre-primary school shall, in the child, lay the foundation of a will to seek and use knowledge in order to improve the own conditions as well as the conditions of others."
>
> (Cognitive and Affective Objectives
> 1 and 3, SOU 1972:26 p. 63)

On what educational ideology are these goals based? The Hellström Report discusses and evaluates three kinds of methodical systems: _the mediating model_, _the developmental psychology model_ and _the dialogue model._

The mediating model, which bears a strong affinity to behaviourist psychology of learning, starts from the idea that the student should acquire certain knowledge, certain behaviour or certain attitudes. The Hellström Report rejects the mediating model because it can easily induce the adult to regard the child as an object. Moreover, this model is somewhat authoritarian and provides few opportunities for a development towards independence.

The developmental psychology model is based on Gesell's psychology and assumes that the child itself can acquire the knowledge and the way of life to which it aspires. The adult shall passively participate and only convey stimulation. The Hellström Report cannot accept this educational idea either, as it, to a great extent, eliminates the mutual involvement of adult and child and as it easily can make the child develop passivity and insecurity.

The best model, according to the Hellström Report, is the dialogue model, which starts from a continuous dialogue between child and adult at an inner and an outer level. In other words, it is a question of a mutual giving and taking of emotions, experiences and knowledge. The report states, furthermore, that the model assumes that the adult sees the child as a human being with a potential which can be developed by an interaction in which the starting point is the child's behaviour, experiences and values. Instead of telling what is right or wrong, which is the case in the mediating model, the dialogue model tries to stimulate the child to verify and evaluate facts, experiences and emotions. Even in the Hellström Report on children's leisure time (SOU 1974:42) the importance of a dialogue model is emphasized with respect to the educational relationship between adults and children from seven to twelve years of age.

The basic view of the Hellström Report (SOU 1972:26) amounts to a declaration of war against such factors in the environment as exert a negative influence on the child. If an absolute dialogue education is developed within the general preprimary school, and if the norms and standards, previously used, are eliminated, then socio-economic deprivation would become of minor importance in school. If the child's inherent capacity could be evolved in a relationship of dialogue with adults, then, at least in principle, there would be greater possibilities for improving the conditions for those children who get little stimulation at home.

Dialouge education sets up certain goals although these differ from those of mediating education. The goals are in accordance with the basic view that society exists for the sake of the individual. They are developed by teachers and students together and not by any external influence. If the dialogue educational approach was to be applied to the linguistic development then the ultimate meaning of teaching in the schools must be to develop a language which is communicative in the sense that the individual, by means of his language, can assert himself and influence the surrounding world. In dialogue education Bernstein's categorical codes (Elaborated and Restricted Codes) will be irrelevant, as it, in this context, will become a question of using the language in order to achieve certain aims - not of using it for its own sake. Here, I would like to refer to a research of Labov (1972) in which he was able to show that the English spoken by negroes in the American slum districts ("non-standard English", according to Labov) constitutes, as a matter of fact, a social dialect (sociolect) with a rule system of its own. This language is in my opinion superior to "standard English" by allowing the expressing of emotions and attitudes by those individuals who can speak and understand non-standard English.

10.3 The goals of the comprehensive school

If the Swedish general pre-primary school has an outspoken educational programme, thanks to the Hellström Report (SOU 1972:26), the same thing cannot be said about the comprehensive school. In "Mål och Riktlinjer" (i.e. Aims and Guidelines) which expresses the educational ideology behind the comprehensive school (Läroplan för grundskolan, 1969, i.e. the National Standard Curriculum of the Comprehensive School, 1969) it is hard to discover an explicit educational model. A general socio-liberal outlook characterizes its style. In the introduction the following is found:

> "The individual is in the midst of the activities in the school. Those who work within the school are to respect his human dignity and should try to take cognizance of his individuality and endowments and further his personal maturational process into a free, independent and well-balanced human being."
>
> (Lgr 69, p. 10)

A bit further down in the mentioned curriculum it is emphasized that the individual's needs and the demands of society together determine the content of and the forms for the activities in the school. This is a vague approach, i.e. one wishes to establish goals which should then be attained by means of mediating education. The optimally efficient teaching, is presented by means of principles of teaching, abbreviated MAKIS which are the initial letters of the words Motivation, Aktivitet, Konkretion, Individualisering och Samarbete, i.e. Motivation, Activity, Concretion, Individualization and Co-operation.

The only thing said about the adjustment of the subject matter to the social background of the student is that the teacher ought to make himself as complete a picture of the student as possible in order better to fulfil his mission. This mission is to

> "promote an all-round development of the students and, in so doing, to impart knowledge to the students and train their abilities".
>
> (Skollagen, quoted in Lgr. 69, p. 10)

There are no recommendations given in Lgr 69 to the teacher for carrying out his teaching of those students who are socially deprived.

In the report concerning the inner work of the school, called the Orring Report (SOU 1974:53), there is a detailed discussion of so-called "socially related difficulties" which are connected with deficiencies in the home environment.

The recommendations of the Orring Report (SOU 1974:53) state that the school, by a number of measures (in the report called programmes of measures of support), should try to eliminate various forms of problems which the student meets with when trying to reach the goals of the school, as these are formulated in the National Standard Curriculum.

In the Orring Report (SOU 1974:53) remedial programmes carried out abroad have been examined, and it is stated that a strengthening of resources alone is not a guarantee for a positive outcome. Moreover, the Orring Report emphasizes that remedial programmes must be applied very early if they are to get the desired effects. But the recommendations for measures imply, in reality, that different remedial programmes should be carried out. In Chapter 9 of the report special resources for students suffering various types of deprivation were for example suggested. These extra resources should be used for a diagnosis as well as for a programme of action for students in need of assistance. In contrast to previous doctrines of "special teaching" the students in need of "special teaching" are, according to the Orring Report (SOU 1974:53) not to be divided into fixed groups. Instead they should have their remedial programmes within the framework of the ordinary class. In the instructions of the committee, no task of analysing the goals of the school as they are formulated in the educational curricula, has been given, nor any task analysing the methods leading up to these goals. This is, in my opinion, a shortcoming. The recommendations of the Orring Report (SOU 1974:53) can hardly be carried out without a large-scale revision of the National Standard Curricula. The educational approach must imply the choice of one educational model. This is a necessary prerequisite for the inner work of the school to be able to help the deprived students.

10.4 The educational programmes of the general pre-primary and of the comprehensive school

It is striking to notice the extent to which educational models differ with respect to pre-primary and comprehensive school. For pre-primary school, it has clearly been stated that a dialogue education is viewed as the only possible method for actively developing children in accordance with their endowments. The comprehensive school lacks a similar programme of action. Socio-liberal ideas about remedial programmes to compensate the situation of disabled individuals are coupled with the behaviouristic ideas of learning presented in the National Standard Curriculum. In his thesis on educational deprivation Emanuelsson (1974) analyses a set of quotations taken from the National Standard Curriculum for the comprehensive school, dividing them into those advocating an organismic model and those advocating a mechanistic model. He has taken these terms from Reese and Overton (1970). They use them as thesis and antithesis. The mechanistic model is equivalent with a behaviouristic model.

Emanuelsson (1974, p. 45) writes:

> "One looks upon the 'individual-pupil' as if he all the time reacted to 'stimuli-subject matter' - and one expects a certain 'reaction-learning', which could not be brought about without this stimulation."

Emanuelsson states that if one analyses texts taken from the general guidelines of the National Standard Curriculum it might lead to ideological conflicts as there is a mixture of organismic and mechanistic models. Emanuelsson maintains that it is impossible to synthesize these two views in the National Standard Curriculum, so that this would work in a class-room situation. Consequently, groups of disabled individuals may be suffering (op cit pp. 45-47). In the comparison I have made between children of lower and higher social status I have tried to find out which one of the two groups will show a relative amelioration or deterioration of the linguistic ability nine years later. The changes all go in the same direction: Those who obtain a higher relative value in 1972 belong to Social Group I or II or have well-educated parents. We might, in this context, speak about _a positive cumulative effect_. Those who obtain low values belong to low social groups or have parents with short-term education. These children have been afflicted by _a cumulative deficit_. These two antagonistic processes take place during the years in which the children attend school. School is unable to provide an education which is 'equal', in the sense that it provides all students with the same opportunity to develop in accordance with their abilities. On the contrary, school seems to have contributed to the widening of the gaps. This is the most controversial conclusion to be drawn from my results. Furthermore, all this must be stated after 35 years of continuous reforms, from the 1940 School Committee Report up to the 1974 Hellström Report.

10.5 Different strategies used to eliminate social deprivation

Both in Emanuelsson's investigation and in my own study it has been found that there exists a kind of educational deprivation which can be directly related to various socio-economic circumstances. It would be naive to conceive of the differences in vocational career which appear in Emanuelsson's study or of the differences in linguistic competence which have been displayed in my study as being the effects of genetic differences. The results are obvious and possible to relate directly to circumstances in the individual's socio-economic environment. I explicitly want to reject a genetic explanation of the kind which A R Jensen has given in two papers (1969 and 1973) to which much attention has been paid. In these he maintains that the failure of the various remedial school programmes, which have been tried out in the United States, are due to the varying intellectual capacities of the pupils, capacities which are said to be genetically conditioned. The so-called Jensenism has been severely criticized, not least in the United States, where it has been interpreted as a manifestation of racial prejudice.

Silberberg and Silberberg (1972) have made a content analysis of Jensen's first article (1969) and they have summed it up in four statements:

1. Jensen has a very inadequate definition of the concept of intelligence.
2. He has fallen into a trap by attempting to try a genetic approach
3. He has not provided any explanation to the fact that the IQ can be raised as an effect of improving the environment.
4. Through Jensen's very negative data on coloured groups, his article may possibly further racial prejudices.

In his second work on heritage and environment, Jensen (1972, pp. 151-157) tries to prove that socio-economic status is genetically conditioned. In his efforts to prove the genetic laws governing development, Jensen tries to give statistical evidence as follows:

> "The correlation between phenotypes (the measurable characteristic) and genotypes (the genetic basis of the phenotype) is the square root of heritability, or *h*. An average estimate of *h* for intelligence in European and North American Caucasian populations is *0.90*. An estimate of the average correlation between occupational status and IQ is *0.50*. A purely environmentalist position says that the correlation between IQ and occupation (or SES) is due entirely to the environmental component of IQ variance. In other words, this hypothesis requires that the correlation between genotypes and SES should be zero. So we have correlations between three sets of variables: (a) between phenotype and genotype, $r_{pg}=0.90$; (b) between phenotype and status, $r_{ps}=0.50$; and (c) the hypothesized correlation between genotype and status, $r_{gs}=0$.
>
> ....
>
> ....The question then becomes: is this set of correlations possible? The first two correlations we know are possible because they are empirically obtained values. The only correlation seriously in question is the hypothesized $r_{gs}=0$. We know that mathematically the true correlations among a set of three variables, 1, 2, 3, must meet the following requirement:
>
> $$r_{12}^2 + r_{13}^2 + r_{23}^2 - 2r_{12}r_{13}r_{23} < 1"$$
>
> (Jensen, 1972, pp. 155-156)

This way of reasoning seems logical but can easily be criticized. His quoted coefficients of correlation are quite arbitrary. Particularly the former $r_{pg}=0.90$, is a pure assumption. It could be *0.80* and even less, and then his reasoning lacks relevance.

Another example: If we make use of Jensen's proof but in the place of $r_{gs}=0$ in the equation put $r_{gs}=0.1$, which means that we assume a very low correlation between genotype and status, the requirement above, known as "consistency relations among correlations", will be satisfied. $(0.81 + 0.25 + 0.01 - 2 \cdot 0.9 \cdot 0.5 \cdot 0.1 = 0.98 < 1)$

I have preferred to illustrate the weaknesses of Jensen's argumentation by means of this example. By this insignificant correlation between genotype and status, $r_{gs}=0.1$, which means that only one per cent of the variance is predictable, I want to prove the absurdity of Jensen's so-called proof. Nobody would probably want entirely to deny a correlation between genotype and socio-economic status. How high this correlation might be is something about which one could only hypothesize. But no behaviouristic scientist, who seriously studies problems connected with social deprivation, would be prepared to fall into the trap, set by Jensen for his refutors.

Jensen's theory has made proselytes in conservative circles, who obtain arguments in favour of a status quo. This implies that they can explain their position of power as due not to lack of equality but to a divine order. By the example above, I wanted to demonstrate on what a frail basis Jensen's thinking is based.

The "Jensenism" does not give any constructive contributions to a discussion of what to do in order to help children who have had an inferior linguistic development due to social obstacles. Therefore Jensen's theory is irrelevant to social education. That his conservative ideas have taken up so much space in this discussion is due to the fact that many people in our country - not least teachers - consider under-achievement as being genetically conditioned. The counter-argument to a contribution on part of society to those children, who due to social obstacles "under-achieve" at school, is generally that "we must think of the clever students". By this is indirectly meant that school also ought to provide for an elite of students. My study, as well as many others, has shown that school today really encourages students coming from socio-economically favoured families. Consequently it is not a question of what to do in order further to improve the situation for these already established students, but rather what to do in order to eliminate the negative effects on socially deprived individuals.

10.6 A Western-European view on the programmes of action for socially deprived individuals

In September, 1973, the Council of Europe held a symposium at Ghent to discuss socially deprived individuals. (The lectures and summaries of current research are reported in the Information Bulletin, Council of Europe, 1, 1974.) The aim of the symposium is evident from the title: The Socio-Culturally Handicapped - from Compensatory to Individualized Education: A Development of Concepts with Particular Respect to Pre-Primary and Primary Education.

De Coster (Information Bulletin, 1974, pp. 57-65) maintains that if a programme of action aims at improving the situation of the underprivileged, school must constitute one of the variables which is manipulated. For, De Coster says (op cit, p. 63):

> "It is obviously impossible to devise strategies for stimulation, compensation or education in general, or even to apply them judiciously, without constant reference to specific operational objectives. The choice of these objectives, both final and intermediate, can only be made on the basis of a diagnosis of the situation."

De Coster states that the only type of measure which might be successful in helping the underprivileged is programmes of action which not only include measures of support at school but also coordinated measures concerning the total reality of the pupil. The remedial programmes which have developed in various European countries on the pattern of the models from the Head-Start Project, has small chances of being successful, according to De Coster. The reason for this is that these remedial programmes in too great an extent consider school as a non-manipulative variable, i.e. one tries by means of special measures to attain the goals of the school without adjusting these goals to the individuals whom one desires to help.

Perrenoud (Information Bulletin, 1974, pp. 66-77), like De Coster, rejects remedial programmes aiming mediating well-defined knowledge by means of improved methods or by introducing an extended school day. He believes that it is impossible to compensate for social deprivation within the school systems of most European countries today. A democratization would bring about three essential ideological changes.

> "1. A rise in the average level of attainment or ability for a given age.
>
> 2. A narrowing of the variations in individual levels around the average level (homogenisation).
>
> 3. A weakening of the statistical link between individual level and social origin."

There are a couple of phenomena which would prevent such changes.

> "- Perpetuation of hierarchical systems of qualifications, and hence, of the social class system:
>
> - transmission from father to son of class membership and, in particular, wealth."
>
> (Perrenoud, op cit, p. 75)

According to Perrenoud, a democratization of the school must interfere with the social class system and work against the interests of the economically dominant class, i.e. the owners or the administrator of the means of production.

Perrenoud's view leans towards Marxism and focuses the problem in an almost too sharp way. We cannot affect the position of the unprivileged to any great extent by means of special teaching or other remedial programmes, if we do not at the same time try to change the goals and methods of the school. A change of the school system, in accordance with Perrenoud's ideas, would entail that children of privileged parents would lose their privileges and their superiority, whereas the "losers" of the present school system would have something to gain from such a change.

Stukat (op cit) gives varied and subtle views of the remedial programmes - views which I believe are typical for many educational researchers and school politicians in Western Europe:

> "It should be emphasized that the critical attitude towards compensatory education does not imply that extra help should not be given to some children. There are many useful or necessary things that the child needs to learn and does not get the opportunity to at home. In such cases compensatory education is generally considered appropriate. Critics usually argue that compensatory education should be adapted to individual needs and have broader aims than making the child fit for a school system with inflexible standards."
>
> (op cit, p. 80)

10.7 Change of the teacher's role

A future school, where social deprivation is attacked implies a new and changed role of the teacher. As I have shown in Chapter 1 the majority of the student teachers in Sweden originate from the middle class. The same thing probably applies to most Western European countries and the United States. (Tedeschi, 1972, Goodacre, 1970, Stent et al, 1973, Oevermann, 1969, Bernstein, 1972). This, in combination with a goal-directed training of teachers for an achievement-oriented school makes it hard for the teacher to identify with students coming from socially deprived environments. A prerequisite for the teacher in a pluralistic society to be able to work actively for levelling the differences in achievements of the pupils, caused by social deprivation, is that he will be able to empathize with the pupil. Eriksson (1975), who thoroughly analysed the teacher's situation today, finds that the new role of the teacher must be linked with a development of the teacher's social perception. This, in its turn, presupposes that the training of teachers should be integrated into the functioning of different parts of society to an ever increasing extent.

The training of teachers must concentrate on the training of such functions as those concerning empathy, insight and understanding of other individuals. This emphatic understanding of the behaviour must furthermore be without any grading of the students on a scale of values from good to bad. In the present school system and its value system in terms of achievement, teachers must value students in accordance with their capacity to meet the demands explicitly formulated in the National Standard Curriculum of the school. The connection between socio-economic deprivation and school problems are well known to most teachers. This connection easily entails a determinism: "There are good and bad pupils". "There is not much to do with a pupil, when the conditions of his family are like that". "We cannot renounce the virtual level of knowledge", etc.

The teacher must know how to balance between the ambiguous guidelines of the National Standard Curriculum of the comprehensive school (cf section 10.2.2) and the socio-liberal view of society concerning the human right to equal education. The mediating education, which by tradition is the most frequent type, does not provide any real opportunities to the teacher for influencing the pupils considered socially deprived, nor for letting himself be influenced by these. A mediating education of a behaviouristic stamp means great risks of increasing the differences between the students owing to the feed-back mechanisms in work. Sandgren (1974, pp. 27-28) has tried to define "change" in his thesis on "Creative Development" as follows:

> "... development as a process is more determined than the products it gives rise to - but at the same time the opposite holds true: The products which the development gives rise to, construct or reorganize this process by their interaction with the environment."

Sandgren's thesis is an elegant formulation of the qualities of two antagonistic processes: _the cumulative effect_ and _the cumulative deficit_.

10.8 A changed school

Until now, I have, in this chapter, been concerned with the latent power of the school to even out socially related differences. On the basis of my own and other studies, I am able to conclude that the school in Sweden of today is to a very minor extent able to achieve the objective of giving all children, irrespectively of social background, the same opportunities for education. My results, which only concern the development of language, indicate furthermore that the school contributes to increasing the differences in linguistic ability between pupils with different types of social backgrounds. General measures of support have been discussed in this chapter on the basis of the points of views on strategies in the fight for an increased equality with respect to education, presented at the symposium arranged by the Council of Europe.

In this context I would like to develop the educational model which I consider a feasible one for satisfying the demands for equality.

The way I recommend is a development of the dialogue educational model, recommended by the Hellström Report (SOU 1972:

26). This type of education is not essentially free in the socio-liberal sense of the word. Dale (1974) also maintains that dialectic education is not free, regarded from a socio-liberal point of view. As an example of this type of misdirected freedom Dale mentions Neill's Summerhill school. The freedom to develop advocated by Neill (1972) is, according to Dale, no real freedom. If the teacher tells his pupils: You are completely free to pick out the things which interest you from my subject!, this implies that the teacher wants his students to be free. But this cannot be the aim of the pupils. Dale finds that Neill and Skinner recommend two sides of the same type of education, since their least common denominator is psychological research concentrating on empirico-analytical problems. The difference between technological and socio-liberal education lies in the use of different techniques, according to Dale.

Dialectic education, on the other hand, is characterized by the relationship between teacher subject, pupil subject and educational object, defined by Dale as the common object of the participants in the educational situation. Consequently, genuine education, according to Dale, involves consciously guiding the student, thus helping him to familiarize himself with the world. This guidance makes the student conscious of the guidance as well as of its prerequisites. It is the third term "the common object" which guides the participants, i.e. the teacher and the pupil. In this way dialogue education (Dale uses the term 'educational dialectic practice') does not imply a twofold relation as in the present educational system but a triple relation, viz subject-subject-object.

Dialogue education, which presupposes changed teacher training and changed curricula, will by this triple relation be able to make use of resources possessed by teacher and students together. The importance attached to the acquisition of knowledge at present might very well be replaced by insights about the relations of knowledge to society and their consequences for the surrounding reality. It should be stressed that acquisition of knowledge, i.e. the gaining of insights, will take place in a school oriented towards dialogue education, but this will occur only when need of and insight into the relations of knowledge to society have been obtained and the goals have been analysed. In dialogue education it may even happen that what is today considered social deprivation will turn into a positive resource by the varied experiences offered by a group of students with various backgrounds.

Can dialogue education be designed as a practical programme of action? On the basis of the Hellström Report (SOU 1972: 26), Eriksson (1975) discusses various categories of teachers and their possibilities of using dialogue education.

He writes about the teaching at the upper level of the comprehensive school:

> "The subject matter teachers of the upper level of comprehensive school enter into it much later, but at this point it must be stated that not until this happens does dialogue education get the chance to develop into a real dialogue. But such a dialogue requires that the teacher dares to be himself and takes a thoroughly analysed standpoint in questions of vital importance to the pupil. To reflect only the prevailing ideas of the student groups can hardly give rise to a dialogue."
>
> (op cit, pp. 85-86)

10.9 Dialogue education and sociolinguistics

In the preceding section I have discussed the potential values of various educational models in exerting influence or in bringing about changes. In this section I therefore want to relate my problem to the dialogue educational model and discuss what can be done in order to eliminate the negative effects which my investigation has revealed.

10.9.1 Measures of support during the preschool period

If one wants linguistic ability to be influenced in an effective and positive way, it is of vital importance to take steps as early as possible. Social scientists like Hunt (1961), Oerter (1969) and Sommer (1972) maintain that measures of support applied after the age of six have little effect. Furthermore, for the measures to be effective, all linguistic activation must be related to appropriate actions. Heinelt (1974, pp. 68-69) maintains:

> "Jedes Training in Vorschulalter muss also, wenn es entsprechend wirkungsvoll sein soll, von Interaktionen begleitet sein. In jedem Fall empfiehlt es sich die Eltern in den Prozess mit einzubeziehen, um einer möglichen neurotisierenden Entfernung vom Ursprungsmilieu vorzubeugen. Mit Sprachprogrammen ist also das Problem nicht zu lösen, wenn nicht Kontaktsituationen hinzutreten. Auch ist zu befürchten,dass sich Kinder mekanisch Wörter aneignen ohne die Voraussetzungen für deren Verständnis zu erfüllen."

Heinelt's apprehensions of the weak effect arising if isolated compensatory measures are applied have previously been discussed and verified with respect to the Head-Start Project in the United States.

Are there any methods worked out for the purpose of linguistic training in the general pre-primary school, according to a dialogue educational model? There are attempts but hardly any developed method. In the Hellström Report (SOU 1972:26), Öhman has given some viewpoints on linguistic training in the general pre-primary school. He would like to have more interdisciplinary collaboration (linguistics, psychology, education) in order to produce a methodology applicable in practice. According to Öhman (op cit, p. 260) linguistic training should include all the strata of the language: phonemic structure, inflectional and derivational morphology, syntactic structure and semantic structure. This activity should be organized taking the situational context into consideration. Öhman stresses, like Heinelt, the importance of carrying on linguistic training not as an isolated activity but integrated into other activities in general pre-primary school.

A method which is worth mentioning, is the so-called LTG method, i. e. the Reading Based on Speech method (RBS), presented by Leimar (1974). The RBS Method is based on the idea of using the individual child's own concepts as they appear in real situations. While traditional learning of reading is based on texts in combination with pictures, and it is assumed that associations should form links between word and picture, here the children themselves present the material which is then to be elaborated. The method is divided into five phases:

1. Conversational phase
2. Dictating phase
3. Laboratory phase
4. Re-reading phase
5. Follow-up phase

The word material is obtained from conversations on a given current subject or theme (1). When the conversations have been finished the children and the teacher decide together what the teacher should write down. Her writing (2) is followed up by a phonemic analysis. During the laboratory phase (3) the children are supposed to work upon what has been written down. The following day the laboratory phase is followed by the re-reading phase. During this the ability of the individual pupil is studied with regard to the subject-matter which he himself has helped to formulate (4). Finally the children are supposed to do reading and writing exercises, often in combination with an illustration of the various words (5). - The method is dialectic because of the common attitudes of the subjects, i.e.

the pupil subject and the teacher subject, towards the object, i.e. "that which is about to be discussed". The RBS method has, to a limited extent, been tried out in general pre-primary school (Leimar, 1974, Albin and Hasselgren, 1975). In this investigation the first three phases of the method were included.

In what way can the RBS method be used to yield a positive sociolinguistic effect? Knowing that measures should be applied early in order to prevent a consolidation and an accumulation of social deprivation which exert an influence on linguistic ability, we should develop the RBS method and other dialogue educational methods for the general pre-primary school. According to legislation based on the proposals of the Hellström Report (SOU 1972:26) every local authority in Sweden is responsible for providing all six-year-old children with an opportunity to participate in the activities of the general pre-primary school. Furthermore, it is imposed upon the local authorities that if particular reasons exist, e.g. social deprivation, linguistic problems (immigrants), room should also be made for younger children in the general pre-primary school. Each local authority is responsible for initiating so-called housecalling educational activities. This new law will probably in the long run constitute in the struggle against socio-cultural deprivation. It would be desirable if the age limit were lowered to at least five years of age.

10.9.2 Measures to be taken at the middle and upper levels of the comprehensive school

Before we get the positive effects expected from the activities of the new general pre-primary school (which assumes that the teachers of the general pre-primary school discover a methodology for the application of the educational dialogue model), many Swedish school children will be verbally deprived, owing to socio-economic circumstances. These conditions cannot be witnessed in silence while idly awaiting the changing of society and of educational ideology. But the problem is difficult to solve, not least because of the bad experiences reported from various forms of remedial programmes. Increased methodical work for the development of various forms of dialogue education combined with a surer diagnosis of linguistic ability constitutes possibilities for exerting a positive influence on present-day pupils, who, due to socio-economic circumstances, are verbally deprived. The methodical development of a dialogue education, applicable in practice, should be furthered by means of experiences from experiments using the RBS method.

The precision of the diagnosis can be increased only if more sophisticated methods are developed to determine types and degrees of verbal deprivation. Up to now the diagnosis has been based on artificial linguistic tests which lack contextual meaning. This has entailed that verbal deprivation has been described in a mechanistic way and that the measures taken have been related to this mechanistic attitude. If the criterion of good linguistic ability in the widest sense is to be able to study the supply of information in the pluralistic society, to interpret it and to exert an influence on this supply in order to contribute to various changes, then the evaluation of language behaviour must be based on active contextual linguistic behaviour. This implies that the diagnosis must be based on speech. Here, I believe that the sentence structure analysis, presented in this thesis, might be used. Consequently, the MAMBA method might be developed into a practical instrument for diagnosing verbal deprivation. The dialogue education which I advocate requires that the teacher, i. e. one of the subjects, is informed about the object, i. e. about the acquisition of language in a broad sense. The other subject, i e the pupil, will then be informed about the particular details of the object. If verbal deprivation is characterized by short and incomplete sentences poor in words and sterotyped in expression, then dialogue education must be designed so that these qualities are particularly trained. But the training should be divided into three different parts: subject (teacher) - subject (pupil) - object (subject-matter). As I have interpreted dialogue education it does not imply freedom in the sense that the pupil should try to gain insight without guidance, i. e. in our case a better linguistic ability. Dialectic education can use the techniques developed in the traditional mediating education. Thus, established methods within the field of the teaching of reading, launched by e. g. Malmquist, might successfully be applied within dialogue education. The chief draw-back of the methods of mediating education is, however, that one knows very little about existing needs. Starting from the language of the pupils themselves as in the RBS method, as a consequence, seems both plausible and natural. It seems equally natural to try to exert an influence by means of analyses of the language of the pupils, aiming at improving linguistic ability so that language can be used in a more functional way.

At present the following measures ought to be applied:

- development of the RBS method with experimental work at the middle and upper level of the comprehensive school
- development of methods of diagnosing verbal deprivation, e. g. a further development of the MAMBA method

10.10 Basic and additional training of teachers

A sudden change of the educational methodology of present-day teachers from being traditionally mediating into being dialectical is probably excluded. What ought to be done instead is systematically to train student teachers and teachers-in-service in a problem-oriented dialogue education governed by needs. This assumes that the aim of the training of the future teachers and teachers-in-service should not primarily be to impart methodological and educational knowledge about how to teach a subject-matter but instead to train functional abilities so that a dialectical relationship can arise between teachers and pupils.

Eriksson (1975, p. 29) writes about other demands on the teachers as follows:

> "If the teacher is to be able to contribute to the development of the pupil's personality, mainly through his teaching, it is obvious that she must be capable of empathy with the situation of the pupil and be shown of a high degree of respect for her own opinions, emotions and experiences, and at the same time be bold enough to give vent to them and also require open communication on the part of the pupils and furthermore show respect for their opinions, feelings and experiences. If one uses the collected experiences concerning leadership in a group dynamic context besides the demand for empathy, the demands for respect and regard for others, for genuinity and closeness, for devotion and closeness, for ability to provide security and strength and for being open, straightforward and honest will appear important to the person supposed to lead groups in which a personal development is also supposed to take place."

The training of teachers in our country is looked upon by the students as being too theoretical which has appeared from the reports of the KUL-Ä and the KULT-Ä Projects. (KUL-Ä is the abbreviation of "Qualitative Evaluation of Teacher Training, Subject Teacher Line". KULT-Ä is the abbreviation of "Qualitative Evaluation of Teaching Service, Subject Teacher Line". These two projects are carried out at the Linköping School of Education.) The experimental activity which is going on at present with dialogue educational teaching at several of our schools of education (documented by Brusling, 1975, Eriksson-Schüllerqvist, 1975, Larsson & Udhagen, 1974 and Linné, 1975) forms a beginning of a more systematized education as mentioned.

It is impossible to distinguish between the demand for a different training of language and the demand for a different type of education altogether. That is why great space has been devoted to the more comprehensive educational programme. Below I consequently want to discuss the direct needs of sociolinguistic education for teachers already in service.

10.10.1 The training in sociolinguistics for teachers in service

In a contribution to the discussion of native-language teaching in England, Rosen (1974) has strongly emphasized the lack of an appropriate methodology (in Barnes et al, 1974). That native-language teaching has not yet yielded any effects worth mentioning for verbally deprived students, in spite of increased further training, is, according to Rosen, due to the fact that the teachers have not understood the meaning of the group dynamic and dialectical methods which have been tried out. Rosen writes that in group dynamic play aiming at remedying verbally deprived individuals the teachers do most of the talking themselves. The teachers have a positive attitude towards group dynamic education. They think the method is enjoyable and they do believe in its effects.

> "The teacher is the most active player in the game. He makes most moves; he speaks most frequently, his speeches are longest. The ratio of his speech to the speech of all players is three to one.
> .... The teacher is primarily a solicitor and the pupil a respondent."
>
> (Rosen, in Barnes et al, 1974, p. 122)

Rosen focuses on the dilemma in the following way: to teach methods for language training is not enough, - we must also teach about the aim, namely to get rid of the idea that "the teacher knows best". This is necessary if a group-dynamic way of working with a dialogue education is going to have any effect.

If measures in the form of dialogue educational training are to be carried out it is necessary for the teachers to be aware of the existence of verbal deprivation due to socio-economic circumstances. During a course for teachers of Swedish language in the Summer of 1975 a few questions were posed to the 200 participants concerning their attitude towards sociolinguistic problems. (Course arranged for teachers of Swedish organized by the National Board of Education.) Below a few of the answers are rendered:

- 98 per cent of the teachers thought that sociolinguistics should be included in the training programme for teachers of Swedish
- 73 per cent were of the opinion that there are different linguistic codes in Sweden
- 66 per cent believed that language is firmly linked to social classes
- On the question of whether teaching of Swedish today was efficient with respect to pupils suffering from verbal deprivation, 89 per cent answered that teaching did not yield any results worth mentioning
- 79 per cent were of the opinion that school, to a crucial extent or in some degree, contributes to the development of a language for experts which favours pupils already privileged
- 64 per cent thought that they had not received a training adjusted to the teaching post they occupied

It appeared from the answers that the teachers wanted sociolinguistic training and that they did not believe that present teaching could eliminate verbal deprivation due to home conditions.

A training programme in sociolinguistics for teachers of Swedish seems to be a first priority, according to the questionnaire study mentioned. That such a training ought to focus on dialogue educational methods, seems obvious to me. This obviousness is due to the fact that the general pre-primary school in Sweden has as educational model adopted the dialogue education. Since the pupils of the pre-primary school become pupils of the comprehensive school after a year or two, they should then be presented with the same educational model as the one they met with in the pre-primary school. At the same time neither so-called free education nor mediating education has, in any knowncase, contributed to an increased educational equality.

10.11 The sociolinguistic educational programme

During the 70's a vivid discussion has been carried on about questions of equality. General Committee reports on school, the Orring Report (SOU 1974:53) and the Hellström Reports (SOU 1972:26 and SOU 1974:42) strive to promote an increased degree of equality. This idea of equality was already to be found in the report on the comprehensive school (1960). In Sweden scientists and politicians have participated in the discussion with interesting reports and contributions (e.g. Bengtsson and Härnquist, 1972, Gesser and Fasth, 1973, the Sandgren Report, SOU 1973:2). Deprivation due to socio-economic inequality has been discussed at seminars and symposia (e.g. the Nordic Summer University, 1972-73 and Symposium on Social Development at School, 1974). This activity has yielded very poor results. In his doctoral thesis, Emanuelsson (1974) could not find evidence for the ability of school to reduce educational deprivation. In this thesis I have shown that socially deprived individuals do not even keep their relative linguistic ability from the preschool age but rather show deterioration after nine years of school. Consequently, a sociolinguistic programme should be designed which aims at showing effects as soon as possible. I do believe that verbal deprivation has an inhibitory effect not only on the pupil's capacity to profit from the teaching of his native language but also on his potential to assimilate education and information from society Theoretically, there is a great risk that the gaps between privileged and underprivileged individuals will be increased by the rapid development of society. Young's (1959) vision of the technocratic society, in which the meritocrats have the power, can turn into an uncanny reality if we do not pay heed to the problems now.

The measures which can and should be taken today and which are supported by research and practical experience can be summarized as below:

1. Development of models for the near-to-life activity within the general pre-primary school - models which are based on the dialogue education recommended by the Hellström Report.
2. An increased concentration within the comprehensive school on measures which contribute to making the teaching more governed by needs. This implies that one, at an early stage, attacks the shortcomings related to unfavourable conditions at home and that one, by means of a dialogue education method, diagnoses the problems and looks for appropriate measures. Furthermore, the RBS method should be made known so that teachers at all levels will be able to use it.
3. Measures within teacher training and touching upon teachers in service, aiming at providing information on sociolinguistics as well as discussing and trying out new educational models.

4. Compulsory education in sociolinguistics for all teachers of Swedish. (In an application to The Chancellor of the Swedish Universities ASLA, Association Suédoice de Linguistique Appliquée, has proposed a reconstruction of the theoretical part of the training of modern languages, Swedish and Swedish as a foreign language. Two of the proposed subcourses include psycho- and sociolinguistics. Ellegård, chairman, 1975)

The proposals rendered in these four paragraphs are not new and much of their content has been accomplished already. But the measures applied up to present are still inadequate. The questionnaire study with the 200 teachers of Swedish referred to in this chapter display the acute need of action.

The measures already proposed are not enough to affect linguistic ability to a crucial extent or to prevent negative influences from reducing the opportunities of the individual in society. Measures, which according to existing research results should be taken during the next few years, can be summarized as follows.

1. Extended compulsory pre-primary school for all preschool children from three years of age and upwards. The research within developmental psychology has clearly illustrated that the largest positive effects can be reached if measures are applied early.
2. The experiences from remedial programmes abroad have displayed that institutional measures of support are not enough. To give support only in the form of an early attendance of general pre-primary school to children socially deprived does not suffice. Consequently, extra resources must be applied for the education of the adult in the groups of society which are now educationally deprived. This, in its turn, implicates that the already privileged must renounce their claims on education.

3. A revision of the educational models, which now are in force within the comprehensive school and are documented in the National Standard Curriculum, so that a dialogue education can be applied.

4. An increased concentration on sociolinguistic research and method development in order to find better ways of diagnosing problems and to find new methods for remedying verbal deprivation.

There is room for the measures proposed above within the latent capacity of a pluralistic society. In Chapter 3, in which I gave a summary of the values which have up to now governed sociolinguistic research, a synthesis of two opposite views on appropriate measures was formulated. The views were those of the Marxists on one hand and the socio-liberals on the other. Instead of proposing a radical change of society, like the Marxists, or measures within the prevailing system, like the socio-liberals, I am of the opinion that the best way is changing the conditions within the pluralistic society as much as possible, and applying measures of support. My suggestions presented in this chapter are included by this synthesis.

10.12 A few concluding remarks

Lundgren (1974) states that the suggested solutions of the problems of school in their simplicity sharply contrast with the nature of the problems. He writes:

> "The only strange and mysterious thing is the willingness with which we are carried away and the weak resistance we have towards simple ideas. This concerns direct solutions of school problems as well as the discussion of ideas in educational science. In their ponderous movements parts of this discussion remind me of a flock of starlings. One lifts and like a heavy cloud, the others follow."
>
> (Lundgren, 1974)

Lundgren's metaphor on the rapid rise of educational ideas and their versatility is to the point as regards Swedish school politics. A typical example is the Orring Report (1974). One of the motives behind an extended school day is the demand for equality, i.e. all children should be able to get a better contact with the supply of cultural and leisure activities. This is a fundamental idea. We cannot ever get an increased equality by applying measures in form of remedial teaching or an extended school day without at the same time affecting the reality surrounding the pupil during the time he is not at school. And we cannot reach any equality if we do not first decide what educational ideology we want.

For this reason a discussion with the politicians must deal with how we actually want to work out our educational policy. Can we really accept that our school, which aims at being an instrument of equality, primarily favours the pupils who are privileged already at the outset? Can we accept an educational system where one, already at the beginning of school can predict from socio-economic circumstances who are going to be winners and who are going to be losers?

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INSTRUCTIONS

Instruktion till Definitions-provet (H:5)

H:5-provet, som konstruerats genom systematiskt urval från Hässelbergs svenska ordlista för skolans lägre klasser, avser att ge ett kvantitativt mått på ordförrådets storlek hos förskolebarn i åldern 4 - 6 år.

Innan testningen börjar, bör försöksledaren ha nått god personlig kontakt med barnet. Testningen inleds med att försöksledaren säger:

Nu skall du och jag leka en skojig lek. Det är en ordlek. När jag säger ett ord, skall du tala om vad som menas med det.
Börja sedan med första ordet i testet "ballong".
Vad menas med en ballong? eller Vad är en ballong för något?

När ett substantiv bjudes, sätts obestämda artikeln framför ordet.
Vid verb sätts infinitivmärket "att" framför.
Om barnet vägrar besvara en fråga, hoppa då till ett ord som Du tror att barnet klarar. Gå sedan tillbaka till det ord som först bjöds.
Pressa inte barnet! H:5-provet bör inte ta längre tid än 10-15 min.

Protokollering

För rätt definition sätts ett + i högra marginalen. Ger barnet fel definition eller ej svarar, sätt ett -.
Försök att på raden efter varje ord snabbt anteckna det som barnet säger. Detta skall ske om barnets definition är tvivelaktig eller vag.
Samtliga ord fr.o.m. nr 1 t.o.m. nr 25 skall bjudas, oavsett om barnet misslyckas på flera ord.
Fr.o.m. nr 26 gäller regeln att testningen avbryts när barnet missat 8 ord i sträck.
När provet avslutats, summera alla + och slutresultatet skrivs längst ned till höger på sid. H:5:2, och på barnets kort (kol.H:5)

Allmänna regler

Barnet bör ständigt uppmuntras till att svara. Ge mycket beröm!
Säg aldrig att barnet har fel. Pratsamma förskolebarn, som vid ett ord associerar till annat och flödar över i pratglädje, bör efter en stund med vänlighet återföras till uppgifterna. (Ex. Oh, vad duktig du var, men nu skall vi fortsätta med leken. Vad menas med...etc)

Obs. Vid vag definition skall barnet uppmanas att förklara vidare. (Ex.Vid ordet "kilometer" blir svaret: Jag brukar gå till mormor. Säg då! Det var fint e.d., men vad menas med ordet kilometer eller men vad menas med en kilometer. Om barnet då svarar - det är när jag går den långa vägen till mormor, det är många kilometer dit - visar svaret att barnet har förstått innebörden i ordet och svaret godkännes. Ges däremot ingen ytterligare definition underkännes svaret.)

Instruktion till Rekognitions-provet (OB)

1. Försöksledaren säger:
Nu skall du och jag leka ett ordspel med bilder. Titta här (visa första tavlan). När jag nu säger ett ord så skall du peka på den bild som passar bäst. En del av orden (alt. spelet) är väldigt lätta (lätt), men en del är ganska svåra (svår). Om du inte kan ett ord så skall du säga: kan inte.

2. För att kontrollera att barnet begripit instruktionen skall du börja att bjuda de två första orden i Form 1. Normalt bör samtliga barn klara dem. Gå sedan över till två mycket svåra t.ex. 34 och 35: arena och rotera. Då barnet inte klarar dem skall det svara: kan inte.

3. Nu vet du att barnet har förstått instruktionen och testningen kan börja. Om barnet inte har förstått instruktionen, bjud ytterligare ett par lätta och ett par svåra ord.

4. Anm. Vissa lata och bekväma eller osäkra och rädda barn kan simulera okunnighet för att komma lättare undan. Misstänker du simulans, skall du "pressa" barnet.

Protokollering

5. Korrekt svar ger +, inkorrekt eller uteblivet svar ger -.
6. Den förmåga (abilitet) som antas bli prövat i OB är förmågan att på visuell och auditiv bjudning igenkänna ett ord (recognition). Det bör poängteras att denna förmåga inte är identisk med förmågan att verbalt definiera, vilken förmåga prövas i H:5-provet. Den sistnämnda abiliteten (verbal production) kan karaktäriseras som aktiv; recognition som passiv.

7. Av det sagda framgår att det inte alls är säkert att barnet kan verbalt definiera de ord som det auditivt och visuellt känner igen.
Slutsats: Vid tveksamma fall bör du protokollera liberalt.
Ex. Form 1: 27: skådespel. Fp pekar diffust på första kvadraten. Du är tveksam om barnet begripit ordet och ställer frågan: kan du berätta vad som menas med ett skådespel. Försökspersonens

definition är oklar. I detta fall skall du dock sätta + för ordet (under förutsättning att barnet utan tvekan valde första kvadraten).
Om barnets fingrar villrådigt glider över kvadraterna för att slutligen stanna (efter stor villrådighet) vid den rätta kvadraten, då skall du försöka pressa barnet till en verbal definition.

8. Hela provet skall bjudas. Vid tveksamma fall anteckna vid sidan av ordet eller på baksidan av svarsblanketten.

9. När provet är avslutat, summera alla + för varje form. Summera slutligen ihop de tre formerna och skriv upp totalpoängen längs ned på svarsblanketten och på det kort som finns på varje barn (Kol. OB tot)

Instruktion till Teckna-en-människa testet (TMT)

Teckningen kan göras på baksidan av H:5 provets blad 2.
Säg till barnet: "Nu skall du rita en gubbe. Du får göra honom precis som du själv vill, men det skall vara en hel (tant eller) farbror."

Detta test behöver Du inte bedömma på något sätt.

Instruktion till Ravens progressiva matriser, formbrädesversionen

1. Barnet placeras bekvämt mittemot eller bredvid Dig. Under ett inledande samtal skriver Du barnets namn, grupp och undersökningsnummer på svarsblanketten.

2. Första bunten av matriser plockas fram. Serie A. Tag bort gummibandet. Lägg fram nr 1. Låt gärna barnet hjälpa till.

3. Säg: Se här, en bit av det här mönstret (gör en paus, för pekfingret över mönstret och låt fingret stanna i det tomma utrymmet) har blivit borttagen. Du skall försöka att ta den rätta biten och sätta den på sin plats. Den rätta bilden finns bland de här bitarna (peka). Vilken är den rätta biten? (om barnet tvekar efter ca 15 sek, tag bit nr 1 och säg: den här passar men är fel. Tag bort biten och tag nr 3 istället. Säg: den här passar visst inte heller. Fortsätt med nr 4 och säg: den här passar, inte sant? Lägg tillbaka nr 4 och tag istället nr 6. Säg: den här passar väl inte? Lägg tillbaka nr 6 och säg: tag nu den rätta biten) Har barnet fortfarande inte förstått, gör om exakt samma procedur igen.

4. När första uppgiften klarats av berömmes prestationen och Du föreslår att ni skall titta på nästa pussel. Låt barnet vika upp plattan. Säg: Se efter om du kan finna den bit som passar här. (peka på det tomma utrymmet) Låt barnet försöka tills rätt bit valts. Se dock till att barnet inte på lek väljer fel bit. När barnet klarat uppgiften, säg: Nu förstår du hur du skall göra. Nu tar vi nästa pussel.

5. Fortsätt så med pussel efter pussel. De flesta barn förstår snabbt instruktionen. Om barnet ändrar sig efter att ha satt in en bit, så noteras på svarsblanketten den bit, som barnet slutligen är nöjd med.

6. Skulle barnet eventuellt misslyckas med både A2 och A3, demonstreras A1 igen. Man låter sedan barnet på nytt försöka med A2 och A3.

7. Innan barnet börjar med A4 skall Du säga att det skall se sig noga för innan det tar den rätta biten.

8. Efter de första 4 uppgifterna fortsätter Du i rask takt. Om Du misstänker att barnet slarvar, säg i vänlig men bestämd ton: tänk dig noga för.

9. När serie A är avklarad, säg: Nu skall vi packa samman de här pusslen.

10. Tag fram serie A_B. Peka på de tre första bitarna och säg: Se här och här och här - vilken är det som passar här peka på det tomma utrymmet. Samma procedur som för serie A. Du behöver dock inte förklara så omständigt.

11. Tag slutligen serie B och avsluta testningen.

12. Så fort barnet börjar leka med bitarna eller slarva, skall Du omgående föra barnet tillbaka till uppgiften och säga: Se noga på mönstret och tänk dig för.

13. Nyckel

Problem	1	2	3	4	5	6	7	8	9	10	11	12
A	4	5	1	2	6	3	6	2	1	3	5	4
A_B	4	5	1	6	2	1	3	4	6	3	5	2
B	2	6	1	2	1	3	5	6	4	3	4	5

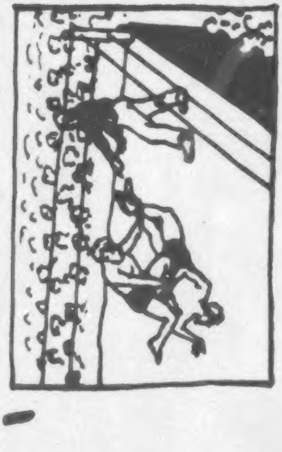
14. Protokollering framgår av bifogad prototyp-svarsblankett.

15. TANK PÅ TYSTNADSPLIKTEN!

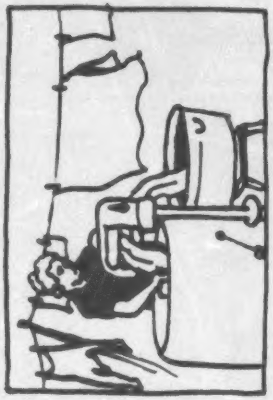
16. Det är dödssynd att nämna ordet test. Säg istället spel eller pussel,

FORM 1

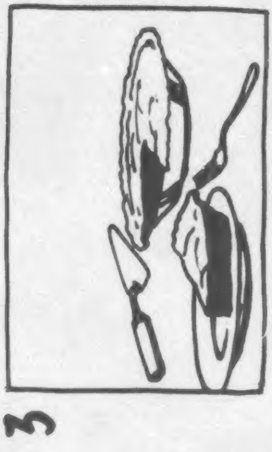
1



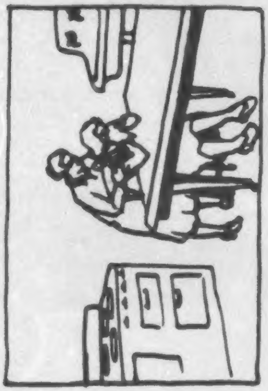
2

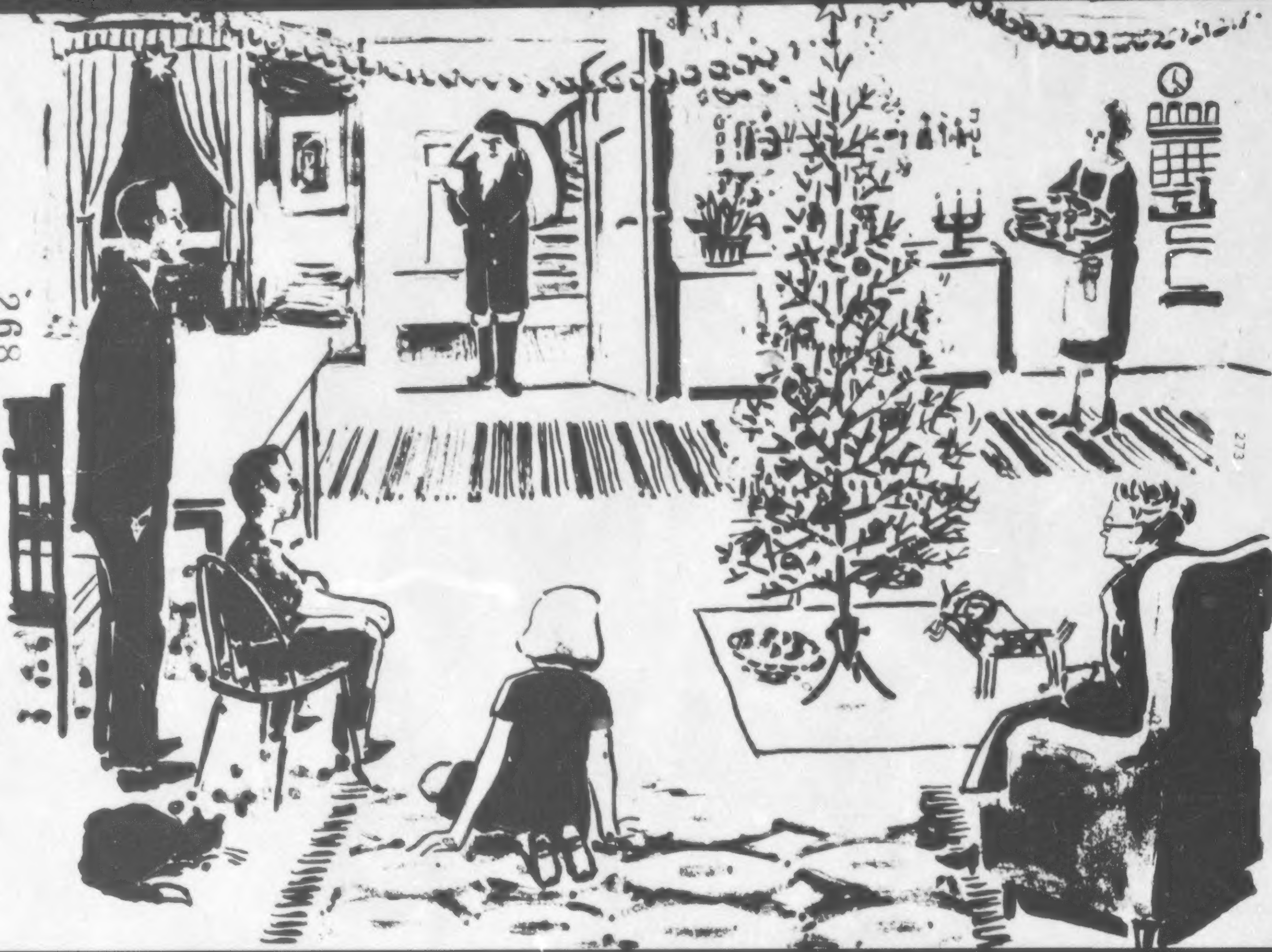


3

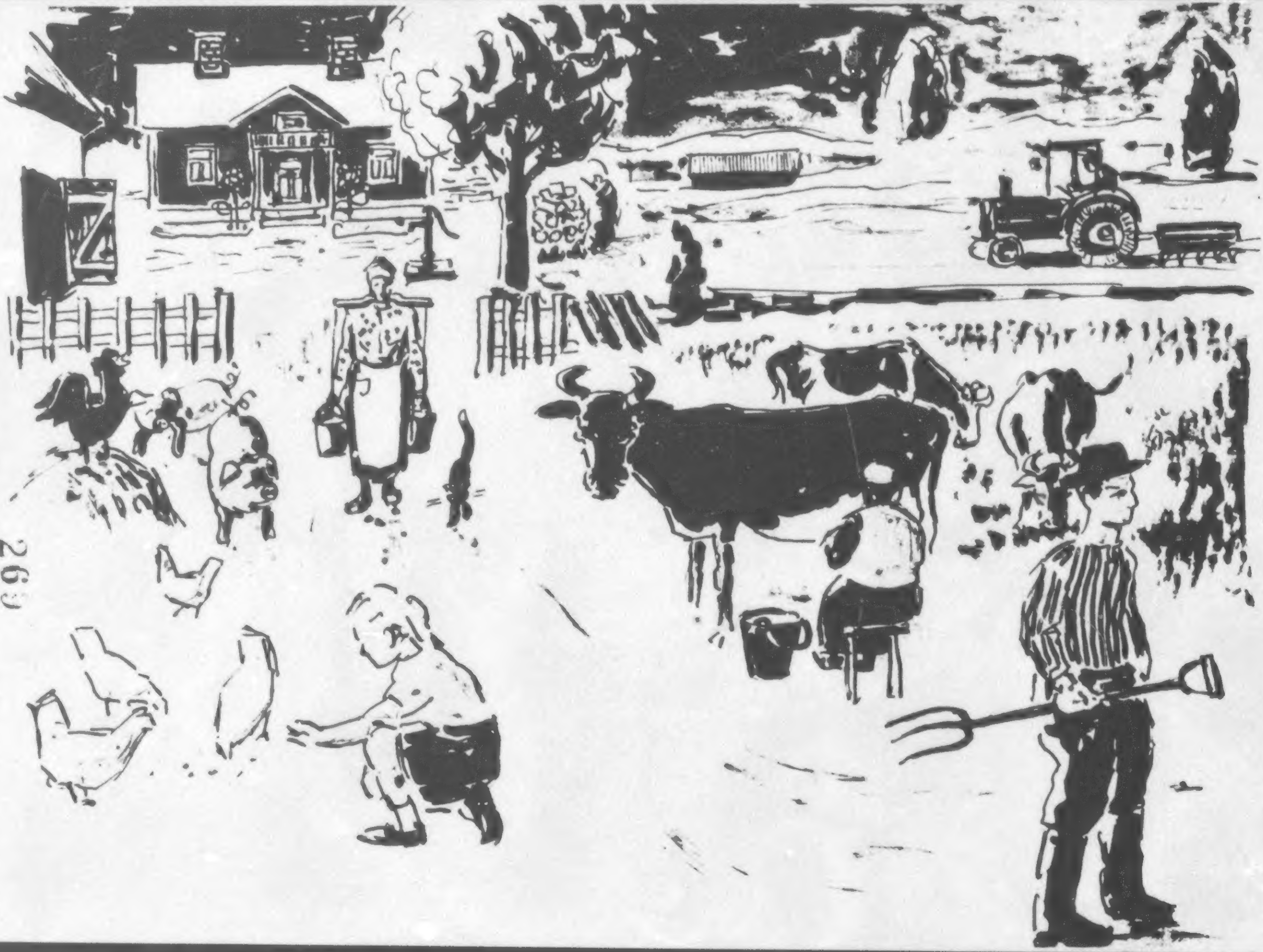


4





Appendix 3 B



Appendix 4

The Percentage Right Answer for the Given Words in the Definition Test. The Words only in Swedish. (Items 1-31)

Age	4	4 1/2	5	5 1/2	6	6 1/2
	b+g	b+g	b+g	b+g	b+g	b+g
1. ballong	91	92	95	96	100	97
2. film	50	80	73	81	89	86
3. hals	100	100	95	100	89	93
4. metkrok	55	72	91	78	93	97
5. rop	36	56	55	67	63	72
6. solig	59	64	64	44	67	69
7. trottoar	77	76	100	96	96	93
8. cigarr	73	72	95	93	100	93
9. fot	100	92	100	96	100	100
10. kofta	32	64	59	59	85	93
11. nål	95	88	100	93	100	97
12. sandal	68	72	86	85	93	93
13. (en) spruta	68	80	95	93	81	90
14. veta	09	24	36	59	30	62
15. dykare	32	56	91	89	89	90
16. fängelse	45	76	91	89	89	90
17. lejon	45	72	77	85	89	90
18. plats	50	68	91	74	85	86
19. smita	50	64	77	85	81	79
20. svettas	27	52	64	85	85	93
21. vit	55	72	86	85	78	86
22. (en) val	14	44	27	41	44	66
23. skridsko	95	88	100	100	100	93
24. kilometer	05	36	36	44	44	59
25. ansikte	91	92	95	96	96	100
26. vänsterhänt	05	16	09	22	48	66
27. upp	55	72	77	85	81	83
28. bomull	64	80	77	89	89	86
29. tycka	14	36	50	70	48	69
30. still	32	64	91	81	89	93
31. bubbla	59	80	86	81	78	79
N	22	25	21	27	29	29

THE 1963 STUDY

The Percentage Right Answer for the Given Words in the Definition Test. The Words only in Swedish. (Items 32-62)

Age	4	4 1/2	5	5 1/2	6	6 1/2
	b+g	b+g	b+g	b+g	b+g	b+g
32. skjuta	73	76	91	100	96	90
33. omkull	45	64	59	85	85	97
34. krycka	09	08	18	37	37	59
35. hicka	32	64	67	70	81	86
36. glöda	00	12	05	19	11	34
37. stycke	05	52	36	37	52	55
38. hök	00	16	05	25	26	55
39. bilist	00	00	05	15	15	21
40. rädisa	05	20	27	37	56	72
41. natur	00	04	18	11	22	55
42. lösa	00	28	23	26	44	62
43. lunga	00	00	05	19	15	48
44. (ett) sätt	00	08	09	15	22	45
45. (till) sjöss	00	04	09	11	26	45
46. präktig	00	04	09	07	15	45
47. överens	00	00	05	30	15	66
48. hur	00	00	00	04	04	31
49. palm	00	12	12	26	37	69
50. mumla	00	00	09	19	22	34
51. kaj	00	16	09	26	26	66
52. åhörare	00	00	00	04	00	24
53. grövre	00	00	04	04	07	21
54. intresse	00	00	00	04	00	38
55. ändra	00	00	18	52	19	76
56. kärl	00	00	00	04	15	14
57. tjäle	00	00	00	00	04	00
58. förtjänst	00	00	00	00	04	03
59. enda	00	00	09	11	11	07
60. redig	00	00	09	07	07	21
61. (en) teg	00	00	00	04	04	00
62. division	00	00	00	00	00	00

THE 1963 STUDY

The Percentage Right Answer for the Given Words in the Recognition Test. The Words only in Swedish. (Form I)

Age	4	4 1/2	5	5 1/2	6	6 1/2
	b+g	b+g	b+g	b+g	b+g	b+g
1. lakan	68	80	86	93	100	97
2. idrott	41	60	100	85	93	93
3. kokplattor	55	56	50	67	83	76
4. fat	91	100	91	96	100	97
5. torkning	68	80	86	67	69	79
6. mat	86	96	91	100	100	97
7. folkmassa	23	36	32	30	52	55
8. gaffel	95	100	95	96	97	100
9. tvätt	95	92	100	93	100	100
10. tårar	36	44	77	67	66	79
11. blåst	18	28	32	48	62	62
12. kök	95	100	100	85	93	93
13. tävling	95	73	100	85	96	90
14. matvara	68	76	77	85	83	79
15. förlorare	09	40	36	44	59	69
16. maskin	73	92	82	93	97	97
17. åskådare	09	24	18	22	31	28
18. tröst	14	32	36	44	59	66
19. gott	50	80	86	81	72	90
20. slagsmål	50	56	82	93	93	100
21. spak	09	28	32	37	24	55
22. motståndare	09	24	14	41	28	41
23. sorg	09	20	23	30	31	66
24. strid	27	36	27	33	45	52
25. portion	18	32	36	37	55	79
26. smekning	00	24	27	19	31	34
27. skådespel	18	52	41	48	66	66
28. ätlig	41	64	64	70	72	69
29. otröstlig	09	36	23	41	59	69
30. kämpe	05	08	14	44	38	48
31. övergiven	00	08	09	19	28	21
32. närande	09	04	00	11	14	14
33. modfälld	00	04	05	11	21	28
34. arena	00	00	05	04	10	17
35. rotera	00	00	09	07	17	10

THE 1963 STUDY

The Percentage Right Answer for the Given Words in the Recognition Test. The words only in Swedish. (Form II)

Age	4	4 1/2	5	5 1/2	6	6 1/2
	b+g	b+g	b+g	b+g	b+g	b+g
1. burkar	73	96	100	96	100	86
2. fall	32	48	45	63	79	79
3. middag	95	100	91	100	97	97
4. ko	86	96	95	96	100	100
5. hatt	82	84	95	100	100	100
6. sitta	91	96	100	100	100	100
7. flod	23	44	64	59	86	86
8. tallrik	100	96	95	100	100	97
9. hyllor	64	80	100	89	100	93
10. smaka	77	92	86	85	83	86
11. himmel	73	80	86	93	97	90
12. bord	91	88	100	96	97	100
13. översvämning	05	32	45	48	62	69
14. riskabel	09	08	14	04	14	17
15. mättnad	23	60	36	63	59	59
16. ström	27	72	36	63	72	79
17. tugga	91	88	100	96	100	100
18. ägare	14	16	27	37	21	28
19. njutning	00	16	14	15	14	38
20. landsbygd	23	40	45	37	66	79
21. oförsiktigt	05	24	23	33	45	64
22. specerier	50	48	64	81	79	87
23. servitris	05	20	18	26	48	59
24. bevattning	27	72	55	44	72	79
25. grepp	00	20	27	19	24	21
26. omedveten	00	20	05	15	31	34
27. (en) vara	05	28	55	63	38	76
28. stinn	00	04	09	04	14	03
29. terräng	00	20	14	07	21	31
30. horisont	05	04	09	04	03	14
31. huvudbonad	05	04	09	07	03	28
32. bordskick	23	36	45	70	69	62
33. bördig	00	12	05	11	14	21
34. konsumtion	00	00	00	00	07	10
35. marin	00	00	05	00	00	03

THE 1963 STUDY

The Percentage Right Answer for the Given Words in the Recognition Test. The Words only in Swedish. (Form III)

Age	4	4 1/2	5	5 1/2	6	6 1/2
	b+g	b+g	b+g	b+g	b+g	b+g
1. bälte	27	68	82	93	93	93
2. dans	82	100	95	100	97	100
3. staket	77	100	95	100	100	100
4. trafik	59	80	95	93	83	90
5. visselpipa	50	76	95	93	97	86
6. peppar	73	84	91	93	93	97
7. kapplöpning	18	32	77	52	86	93
8. salt	82	84	100	96	100	93
9. kvinna	09	56	55	67	86	90
10. socker	91	84	91	100	97	100
11. bana	45	52	64	74	79	79
12. skola	32	32	36	48	52	69
13. kamrat	50	76	86	89	83	90
14. par	09	36	59	33	45	76
15. räcke	18	28	09	19	38	48
16. dryck	32	36	41	48	72	69
17. vrak	09	16	27	37	41	31
18. musik	50	64	64	89	79	79
19. medicin	23	64	73	81	72	79
20. pistol	41	68	77	74	83	86
21. fotgängare	05	08	18	37	21	34
22. elegant	05	20	41	33	31	48
23. vätska	05	12	09	22	24	45
24. hjärtlighet	00	32	23	22	38	52
25. hastighet	00	28	41	56	52	66
26. sällskaplighet	00	28	50	48	48	45
27. krydda	14	44	45	59	59	93
28. bestämd	09	40	32	26	48	52
29. lövverk	05	12	09	22	28	45
30. disciplin	00	16	05	00	07	03
31. stadion	05	16	36	22	31	38
32. publik	05	04	09	19	38	59
33. brygd	00	00	14	04	14	24
34. djärvhet	00	04	09	07	14	34
35. intimitet	00	04	00	04	10	03

Appendix 5 B

THE 1963 STUDY

Means of the Tests in the Subgroups

Variable		Age					
		4	4 1/2	5	5 1/2	6	6 1/2
Raven	b	11.83	20.36	18.08	22.36	21.00	25.07
	g	12.78	15.46	19.00	19.00	21.36	24.21
Draw-a-man	b	4.17	7.00	8.23	10.36	10.83	16.80
	g	7.22	9.31	13.78	11.83	14.64	14.43
Definition	b	18.67	27.36	27.39	30.00	32.58	43.29
	g	16.89	21.69	29.89	33.25	31.93	36.21
Recognition	b	33.50	50.36	54.77	54.71	62.75	71.64
	g	33.33	44.54	49.78	58.25	59.93	64.21
Words	b	66.75	79.36	58.08	91.21	71.08	86.00
	g	84.67	58.23	75.08	80.42	108.64	76.93
Compl sentences	b	9.92	15.46	11.00	12.57	18.17	23.29
	g	13.56	9.39	18.00	15.92	21.36	19.07
Correct words in compl sent	b	53.25	71.82	50.92	64.79	92.50	122.86
	g	64.22	43.92	79.00	82.33	113.57	97.86
Nouns	b	31.50	35.91	31.39	44.64	44.92	42.57
	g	38.00	50.15	47.22	42.00	57.14	44.79
Adjectives	b	2.33	3.27	1.77	2.29	2.50	3.07
	g	3.56	2.77	2.67	4.00	3.21	3.86
Verbs	b	27.92	32.91	23.23	26.86	24.00	35.29
	g	35.33	21.54	37.33	33.92	38.36	33.36
Residual parts of speech	b	100.83	110.64	91.54	101.64	86.17	106.93
		119.11	82.69	109.11	113.33	133.57	102.14
Word index	b	31.67	36.09	32.00	31.57	49.83	61.64
	g	34.22	34.54	40.56	39.75	44.71	46.86
Sentence index	b	38.58	52.36	46.08	43.00	66.00	75.14
	g	50.11	43.85	59.56	53.58	61.14	61.00
Non-enumeration index	b	86.67	88.85	86.85	80.36	87.83	94.14
	g	87.67	83.38	90.56	91.53	87.79	90.29
Monosyllabics	b	3.50	3.91	4.46	3.86	4.92	5.79
	g	3.89	2.77	4.11	5.00	7.71	5.29
Dissyllabics	b	34.91	34.45	27.54	31.79	26.83	37.79
	g	44.00	32.38	35.11	36.08	50.29	38.50
Pollysyllabics	b	86.50	111.82	84.15	107.93	90.00	133.14
	g	127.22	85.46	95.89	114.42	180.43	111.93
Content analysis	b	2.50	3.10	[illegible]	3.70	3.80	4.36
	g	3.00	2.70	3.30	3.90	4.60	4.00
Qual words	b	2.00	2.50	2.70	2.40	2.50	3.80
	g	1.80	1.40	2.80	4.10	4.20	2.80
N	Boys	12	11	13	14	12	14
	Girls	9	13	9	12	14	14

THE 1963 STUDY

Standard Deviations of the Test in the Subgroups

Variable		Age					
		4	4 1/2	5	5 1/2	6	6 1/2
Raven	b	2.64	5.45	4.50	4.05	3.83	3.08
	g	1.93	4.62	5.56	4.40	2.72	4.14
Draw-a-man	b	2.34	4.37	4.53	4.51	3.31	3.54[1.]
	g	3.39	5.81	5.45	3.08	3.75	5.14
Definition	b	6.01	9.35	5.11	8.58	5.60	7.16
	g	5.20	8.16	8.35	8.54	8.48	11.92
Recognition	b	9.41	8.67	7.82	14.12	10.36	11.34
	g	4.76	12.98	8.73	7.69	13.30	16.46
Words	b	43.44	36.33	37.99	42.41	36.88	37.43
	g	36.73	24.48	29.77	40.23	45.46	47.29
Compl sentences	b	10.61	10.53	10.74	9.34	16.57	11.98
	g	4.95	6.71	8.74	11.91	13.89	13.63
Correct words in compl sent	b	63.49	52.37	47.60	52.94	99.17	58.56
	g	25.02	34.32	38.37	63.47	83.20	89.93
Nouns	b	20.44	14.35	[illegible]	16.14	29.42	15.11
	g	10.88	13.98	15.59	17.65	11.62	19.55
Adjectives	b	3.27	3.64	2.54	3.99	2.43	1.62
	g	5.27	3.09	2.26	3.39	3.69	6.21
Verbs	b	27.36	20.55	19.82	18.53	16.87	15.65
	g	15.22	13.03	17.08	21.70	19.75	24.54
Residual parts of speech	b	101.28	64.95	74.36	55.44	55.89	50.02
	g	55.31	42.72	61.17	77.06	63.76	81.08
Word index	b	20.61	15.73	15.21	20.27	21.13	12.94
	g	6.76	17.71	13.18	16.36	18.07	20.28
Sentence index	b	23.23	18.03	15.47	20.09	17.59	10.51
	g	10.45	20.75	11.60	13.52	17.86	23.62
Non-enumeration-index	b	5.91	8.16	9.66	15.66	10.86	9.16
	g	4.57	9.20	4.14	6.66	9.42	12.52
Monosyllabics	b	2.72	2.68	2.88	2.41	3.70	3.42
	g	2.72	2.32	2.56	3.89	5.77	3.18
Dissyllabics	b	18.72	16.54	17.03	12.06	14.97	17.04
	g	21.05	18.61	11.69	13.51	21.86	21.09
Pollysyllabics	b	54.35	52.73	49.19	57.66	84.13	71.17
	g	55.79	49.50	42.87	53.64	97.09	67.40
Content analysis	b	1.26	0.95	1.00	1.01	1.00	1.41
	g	0.83	1.00	0.69	1.03	1.10	1.23
Qual words	b	1.90	1.80	2.10	1.79	2.20	2.73
	g	1.90	1.63	2.60	5.50	3.40	2.00
N	Boys	12	11	13	14	12	14
	Girls	9	13	9	12	14	14

THE 1963 STUDY

Factor Analysis of 19 Linguistic Variables.
The Highest Value per Variable is Underlined

Variable	Rotated factor loadings					Final communality h^2
	1	2	3	4	5	
1. Words pict 7+8	.12	.90	.10	.27	.07	.92
2. Nouns	.21	.78	.01	.13	.33	.77
3. Percentage nouns	.01	-.25	-.20	.60	-.57	.80
4. Adjectives	-.06	.31	.83	-.14	.03	.81
5. Percentage adj	.12	-.09	.87	.12	.14	.82
6. Verbs	.06	.76	.17	-.22	.46	.87
7. Percentage verbs	-.07	.01	.09	-.02	.93	.88
8. Residual wordclasses	.08	.71	.08	-.44	.03	.72
9. Percentage residual wordclasses	.07	.02	-.06	-.85	.02	.73
10. Definition	.82	.30	.07	-.04	-.10	.78
11. Recognition	.88	.11	-.01	-.01	.04	.78
12. Draw-a-man-test	.59	.25	-.21	-.01	.08	.47
13. Raven (intelligence)	.74	.14	.19	-.05	-.05	.61
14. Total sum of words	.17	.91	.09	-.14	.12	.90
15. Sentence legth	.23	.77	.01	-.18	.28	.79
16. Polysyllabics 1) pict 3	.26	.63	.05	.22	-.02	.52
17. Polysyllabics pict 4	.32	.46	.13	.26	.30	.49
18. Content analysis pict 3	.36	.75	-.09	.18	-.01	.74
19. Content analysis pict 4	.51	.64	.06	.01	-.12	.68
Cumulative proportion of total variance	.39	.52	.61	.68	.74	
Eigenvalues	7.36	2.58	1.63	1.42	1.08	

1) Words with 6 or more syllables

THE 1972 STUDY

INSTRUCTIONS

LÄRARHÖGSKOLAN I LINKÖPING
Institutionen för pedagogik
SOSP-projektet

TESTINSTRUKTION TILL WIT III

WIT III omfattar deltesten

klassifikationer	testtid: 6 min
analogier	" 5½ min
motsatser	" 5 min
sifferkombinationer	" 9 min
pussel	" 6½ min

Sammanlagd testtid inklusive instruktioner är ca. en lektionstimme. Det är lämpligt att lägga ut testen på bänkarna innan barnen kommer. Säg sedan till dem:

"På era bänkar ligger ett häfte med uppgifter som ni och jag skall syssla med den här lektionen - men ni får inte titta i häftena förrän jag säger till! Se till att ni har penna och radergummi och skriv ert namn och födelsedatum längst upp på häftet."

ADMINISTRATION AV TESTET

WIT III är ett gruppintelligenstest. Lär in instruktionerna så Du kan dem utantill. Gör inte instruktionen för lång eller för omständlig. När fp har satt igång, kontrollera att de fattat instruktionen. Skulle någon ha fastnat, visa på ett övningsexempel och förklara det.

Instruktion till klassifikationer

"Slå upp den sida där det står en etta överst. I översta rade ser ni fyra figurer, som är av samma sort, och en som inte hör ihop med de andra. Vilken är det, som inte passar ihop med de andra? - Nr 4, ja. Den är avlång, och alla de andra har lika långa sidor. Sätt ett stort kryss över hela den figuren. - Vi tittar på nästa rad. Vilken är det som inte hör ihop med de andra på den raden? - Nr 1, ja, för alla de andra figurerna är slutna, men nr 1 har en öppning. Korsa över den! - Och i tredje raden? Nr 3. Det är den enda av figurerna där ingen av triangelns spetsar vidrör cirkeln. Korsa över den! - Så fortsätter vi på samma sätt med de andra raderna tre sidor framåt. Är det någon rad du inte kan, så hoppa över den och försök med den allra sist. Vänd blad! Börja nu!"

Tidsbegränsning: 6 minuter

Instruktion till analogier

"Vik häftet och se på den sida, där det står en tvåa överst! Längst ut till vänster i översta raden står det: chaufför - bil. På vad sätt hör chaufför ihop med bil? Ja, chauffören kör bilen. Längre ut på samma rad står det fem andra ord. Två av dessa hör ihop på samma sätt som chaufför och bil hör ihop. Vilka ord kan det vara? -Ja, det är rätt! Ryttare hör ihop med häst på samma sätt som chaufför hör ihop med bil, för ryttaren styr hästen på samma sätt som chauffören styr bilen. Korsa då över både ryttare och häst. Så går vi till nästa rad. Där står det till vänster: penna - rita. Vilka två av de fem orden till höger hör ihop på samma sätt som penna hör ihop med rita? Pensel - måla, för man har en pensel när man målar på samma sätt som man har en penna när man ritar. Korsa då över pensel och måla. Ni ska nu själva strax få arbeta med sådana här uppgifter. Är det någon rad ni inte kan så hoppa över den och försök med den allra sist. Vänd blad! Börja nu!"

Tidsbegränsning: 5½ minuter

Instruktion till motsatser

"Vik häftet så att sidan med trean kommer uppåt! I översta raden står: vacker, gammal, ledsen, snabb, ung. Två av dessa ord är varandras motsatser. Vilka två kan det vara? - Rätt! - Gammal och ung. Korsa då över de två orden!
Se på nästa rad. Vilka två ord i den raden är varandras motsatser? -Falsk och äkta. Korsa då över de orden!
Nu skall ni själva få arbeta med de övriga raderna. Är det någon rad ni inte kan, hoppa då över den och försök med den allra sist. Vänd blad! Börja nu!"

Tidsbegränsning: 5 minuter

Instruktion till sifferkombinationer

"Vik häftet så att sidan med fyran kommer uppåt! Här ser ni några rader med siffror, och i översta raden står: 1, 3, 4 (skriv på tavlan om du har tillgång till en sådan). Av de siffrorna skall ni nu göra ett räkneexempel där en av siffrorna skall vara svaret och de andra själva talet. Ni får använda + (plus), -(minus), · (gånger) och : (delat) precis som ni vill.

Hur kan ni då få ett räkneexempel av de tre siffrorna? (Ev. mera hjälp medelst upprepning). Ja, vi får ett räkneexempel, om vi skriver 1 + 3 = 4 här på linjen bredvid. Man kan också få ett räkneexempel, om man minskar fyra med tre och sätter det lika med ett. Det behöver inte alls vara den sista siffran i raden här, som skall bli svaret - det kan lika gärna vara en av de andra! Men vi skriver bara ut en lösning här (peka!) alltså 1+3=4.
Så går vi till rad B. - Där står: 3, 6, 3 (skriv på tavlan om du har någon). Hur skall vi kunna få ett räkneexempel av de siffrorna? Ja, 3 + 3 = 6 (6 - 3 = 3). Då skriver vi det på linjen bredvid!
Så går vi till rad C. Där står 2, 8, 4. Vilket räkneexempel kan vi få av de siffrorna? Kom ihåg att ni får använda vilket räknesätt ni vill! Ja, 2 . 4 = 8 eller 8:2 = 4, men vi skriver bara ut en lösning på linjen bredvid!
Vi tittar nu på rad D. Där står .... osv. (Skriv på tavlan)
Vi fortsätter med rad E. Där står ....osv. " " "
Så går vi till den sista raden - rad F. Där står 50, 5, 5, 5, 5 (skriv på tavlan!). Vilket räkneexempel kan vi få av de siffrorna? Tänk på att vi kan vara tvungna att använda mer än ett räknesätt i samma tal! Ja, 5 . 5 + 5 . 5 = 50. Skriv det på linjen bredvid!
På nästa sida finns det liknande uppgifter, som ni själva kan få lösa. Kom ihåg, att alla siffrorna på varje rad skall vara med i exemplet och att svaret skall utgöras av ett enda tal!
Arbeta snabbt och noggrant! Vänd blad! Börja nu!"

Tidsbegränsning: 9 minuter

Instruktion till pussel

"Vik häftet så att sidan med femman kommer uppåt! Vi tittar på första raden. Vilken figur av dem till höger skall vi ta och sätta in i den första figuren, så att den blir en hel fyrkant? (visa!) - Tänk på att ni får vrida dem, om det behövs. - Ja, den tredje, den i mitten, är den rätta. Då korsar vi över den. - Då tittar vi på nästa. Ja, här behövs två stycken. Vilka? - Ja, den näst sista ska sitta däruppe och den i mitten, nr 3 alltså, skall sitta därnere. Då korsar vi över dem. - Och i den tredje raden? - Ja, här behövs det också två stycken. Vilka? - Ja, nr 3 och 5, dvs. den i mitten och den sista. Då korsar vi över dem. Fortsätt nu med de andra raderna! - Är det någon rad ni inte kan, så hoppa över den och försök med den allra sist. Vänd blad! Börja nu!"

Tidsbegränsning: 6½ min

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Institutionen för pedagogik

SOSP-projektet

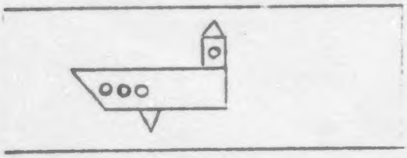
INSTRUKTIONER TILL "UPPGIFTER KRING KREATIVITET"

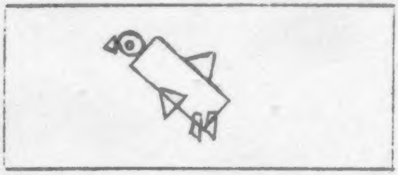
Dela ut testen. Meddela att de ej får vända blad ännu.

Kontrollera att alla har penna och radergummi.

Testningen omfattar ca. = 40 min.

SÄG TILL ELEVERNA	ATT BEAKTA
1. Skriv ditt namn och födelsedatum utanpå svarsblanketten.	
2. Ni skall nu besvara en del uppgifter kring kreativitet. Formuläret är uppdelat på två delprov som båda är tidsbegränsade. Vi kommer att mellan varje delprov att gå igenom en instruktion. Det är viktigt att ni noga följer mina instruktioner, eftersom fel lätt kan uppstå annars. När ni är färdiga vänder ni upp och ned på blanketten så den ligger med baksidan uppåt.	
DELPROV 1	
3. Vänd blad!	
4. Läs igenom instruktionen under rubriken "Delprov 1".	Testledaren bör läsa instruktionen högt. Gå igenom ex.
5. Observera alltså att alla delar skall ingå minst en gång och att delarnas proportioner inte får ändras.	
6. Nederst på sidan finns två exempel på färdiga figurer. Rita ett förslag till lösning av båt i rutan bredvid.	Vänta någon minut medan eleverna funderar över båtproblemet.
7. En lösning kan se ut så här:	Rita på tavlan eller på ett papper.



SÄG TILL ELEVERNA	ATT BEAKTA
8. Vi tar nästa övningsexempel: En fågel. Försök ge en lösning till denna.	Vänta någon minut medan eleverna funderar.
9. En lösning kan ha följande utseende: 	Rita på tavlan eller på ett papper.
10. Är ni nu helt införstådda med principen? Om inte, så kan vi ta ytterligare ett exempel. Eventuella frågor?	Var noga med att kontrollera att alla har förstått principen.
11. Delprovet består av 3 separata sidor och ni har 7 minuter på er för varje sida. Ni får inte vända blad även om ni har klarat av en sidas uppgifter innan dessa 7 minuter har passerat. Överst på varje sida anges de figurer ni skall använda.	
12. Provet börjar i och med att jag säger "vänd blad".	Kontrollera att alla är klara att börja.
13. Vänd blad.	Starta tersuret. Observera: En hel del fniss och prat kan uppstå då eleverna börjat ifyllningen. Försök dämpa. Då 7 min. gått varskos till eleverna:
14. Tiden är slut. Lägg ned pennorna!	Kontrollera att alla omedelbart lägger ned pennorna. Vänta några sek. till oron har lagt sig. Nollställ tersuret.
15. Nästa del börjar i och med att jag säger "vänd blad".	
16. Vänd blad!	Starta tersuret. När 7 min. gått varskos eleverna:
17. Tiden är slut. Lägg ned pennorna!	Se till att alla lägger ned sina pennor.
18. Nästa del, som är den sista i detta delprov, börjar i och med att jag säger "vänd blad".	Nollställ tersuret.
19. Vänd blad!	Starta tersuret. Efter 7 min. varskos:

SÄG TILL ELEVERNA	ATT BEAKTA
20. Tiden är slut. Lägg ned pennorna!	Kolla att så göres. Nollställ tersuret.
DELPROV 2	
21. Vi kommer nu till delprov 2. Vänd blad!	
22. Läs igenom instruktionen till delprovet.	Testledaren kan läsa instruktionen högt. Gå igenom ex.
23. Delprovet består alltså av två avsnitt med tre föremål i varje. Tiden för varje avsnitt är 5 minuter.	
24. Har alla förstått principen?	Om inte, exemplifiera mera.
25. Provet börjar med att jag säger "vänd blad".	Se till att alla är klara.
26. Vänd blad!	Starta tersuret. Då 5 min. har gått varskos:
27. Tiden är ute. Lägg ned pennorna.	Kolla att så göres. Nollställ tersuret och vänta några sekunder.
28. Nästa avsnitt börjar i och med att jag säger "vänd blad".	
29. Vänd blad!	Starta tersuret. Då 5 min. gått varskos:
30. Tiden är ute. Lägg ned pennorna.	Kontrollera detta och nollställ tersuret.
31. Nu är provet avslutat. Ni skall vända häftet så att det ligger med baksidan uppåt.	Samla in häftena.

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LÄRARHÖGSKOLAN I LINKÖPING
Pedagogiska Institutionen
SOSP-projektet

Instruktion till testledaren

ORDFÖRSTÅELSEPROVET

Dela ut provet och instruera eleven att inte vända blad.

Hänvisa till svarsblankettens försättsblad och instruera eleven att fylla i namn, födelsedatum, dagens datum samt klass och skola. Ge eleven tid att fylla i ovanstående.

Låt eleven läsa igenom resten av texten på svarsblankettens försättsblad och gå igenom de båda exemplen. Understryk att samtliga uppgifter skall besvaras trots att eleven i vissa fall måste gissa. Ge plats för frågor.

Provtid: 30 minuter.

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SOSP-projektet

Instruktion till testledaren
ANAGRAM

Testtid: 5 minuter

Dela ut provet och instruera eleven att inte vända blad.

Hänvisa till försättsbladet och instruera eleven att fylla i namn, födelsedatum, dagens datum. Ge eleven tid att fylla i ovanstående.

Gå igenom instruktionen på försättsbladet. Ge plats för frågor.

Provet börjar när Du säger "vänd blad".
Säg: "Vänd blad" och starta tersuret. Varsko efter 5 minuter och se till att alla lä ger ned pennorna.
Samla in proven.

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Institutionen för pedagogik
SOSP-projektet

INSTRUKTIONER TILL LUCK-TEST

Dela ut testen. Meddela att de inte får vända blad förrän Du säger till.
Kontrollera att alla har penna och radergummi.
Testningen omfattar 10 minuter.

SÄG TILL ELEVERNA	ATT BEAKTA
1. Skriv Ditt namn, födelsedatum och dagens datum på blankettens framsida.	Kontrollera
2. Det här är ett s.k. lucktest. Se på första sidan. Där står det: " Det var en gång - och så är det en lucka - pojke som hette Olle." Det fattas ett ord i meningen. Vilket ord fattas?	Låt någon elev svara.
Ja, det är rätt. Ordet "en" fattas. Skriv dit "en" i luckan.	Gå igenom resten av övningsexemplet på samma sätt. Rätta svar är "han" och "visste"
På andra sidan finns en berättelse, där vart femte ord fattas. Överallt där det är en lucka i texten skall ni skriva det ord, som ni tror är borttaget. Det är alltid bara ett ord - aldrig noll ord eller två eller flera ord. Skriv det ord ni tycker passar bäst i luckan. Om det är någon lucka där ni inte alls kommer på något ord att skriva dit, så hoppa över den och gå vidare. Ni har 10 minuter på er. Om ni har tid, så läs igenom berättelsen sen ni fyllt i luckorna och tänk efter om orden passar in i sammanhanget.	
Har ni förstått hur ni skall göra? Vill ni fråga om något så gör det nu.	Besvara ev. frågor.
Då får ni vända blad och börja nu!	Starta tersuret.
	Säg efter 3 min:
"Sitt inte och fundera för länge på en lucka som verkar svår. Hoppa över den och gå vidare istället."	
Stopp! Lägg ifrån Er pennorna!	Säg efter 10 min: Kontrollera!

Instruktion till ORD-BILD-PROVET

Dela ut svarsblanketter. Påpeka att eleverna skall anteckna namn och födelsedatum på svarsblankettens försättsblad, liksom datum och klass. Bilderna till provet är märkta A, B, C och D på varje form och visas för den större försöksgruppen på stordia.

Testledaren:

"Ni skall nu få se fyra bilder på tre tavlor. En tavla i taget visas. Till varje tavla hör ett antal ord. Jag kommer att säga ett ord och ett nummer och Du skall då på svarsblanketten markera bokstavsbeteckningen på den bild som Du tycker bäst passar ihop med ordet. En del ord är väldigt lätta, andra är svårare. Eftersom det är meningen att Du skall markera det ord som Du instinktivt tycker passar bäst får Du nästan ingen betänketid mellan varje ord. Jag kommer att säga varje ord två gånger efter varandra. Uppfattar Du inte ordet eller kan Du inte besvara uppgiften, skall Du markera detta med ett streck på svarsblanketten.

Konversation och samarbete är absolut förbjudet liksom högljudda kommentarer till orden. Proven skall genomgås snabbt och det är därför viktigt att det är helt tyst."

Du skall bjuda orden så snabbt att de bara hinner skriva ned svaret. Ca 2-3 sekunder har visat sig lämpligt. När Du har gått igenom form 1, går Du genast över till form 2 osv. Den sammanlagda provtiden skall ej överstiga 20 minuter.

ORD - BILD - PROVET

	FORM 1		FORM 2		FORM 3
1	befallande	1	skallfraktur	1	maskin
2	hölster	2	hushållskassa	2	tävling
3	hjärtlighet	3	ovetande	3	blåsig
4	sällskaplighet	4	oansvarigt	4	sorglig
5	vätskenivå	5	fridfull	5	övertag
6	högtidligt	6	njutning	6	renlighet
7	kontakt	7	bevattning	7	assiett
8	hastighetsbegränsning	8	kretslopp	8	uppsluppen
9	droppar	9	slump	9	omtänksam
10	krydda	10	horn	10	medlidande
11	vänskaplig	11	attentat	11	deprimerad
12	närkontakt	12	huvudvärk	12	nedstämdhet
13	sladd	13	ström	13	fladdra
14	respekt	14	kontant	14	ömkande
15	acceleration	15	aningslös	15	skådespel
16	ambulans	16	oförsiktighet	16	garnering
17	genomskinlig	17	kredit	17	matlagning
18	fartblind	18	vidsträckt	18	medlidsam
19	disciplin	19	chock	19	brutal
20	lövverk	20	bärkasse	20	tandfarlig
21	kylargrill	21	välbärgad	21	övergiven
22	förtrolig	22	pruta	22	sentimental
23	folknöje	23	välgödd	23	spak
24	sjukvårdare	24	växel	24	aggression
25	fortkörning	25	konsumtion	25	grämelse
26	försiktighet	26	idyll	26	nedtryckt
27	aktningsfull	27	stinn	27	depression
28	sirener	28	korpulent	28	förkrossad
29	högtalare	29	gourmand	29	husgeråd
30	cabriolet	30	skick	30	modfälldhet
31	missnöjd	31	entré	31	överraskning
32	intimitet	32	underdånig	32	hushållsbestyr
33	uppsluppen	33	botanik	33	tristess
34	ovationer	34	självhushåll	34	desillusion
35	gradmarkering	35	dricka	35	gastronomisk

INSTRUKTION TILL "ORDFLÖDE"

Testtid: 3 minuter

Gå igenom instruktionen på blankettens framsida och se till att alla skriver namn, födelsedatum och dagens datum.
Provet börjar med att Du säger "vänd blad".
Säg: "Vänd blad" och starta tersuret.
Varsko efter 3 minuter och se till att alla lägger ned pennorna.
Samla in proven.

LÄRARHÖGSKOLAN I LINKÖPING
Institutionen för pedagogik

SOSF-projektet

Instruktion till Bildprovet

Placera bild nr 1 i over-head-projektorn. Instruera eleverna att skriva och berätta vad de ser. Det skall *inte* vara en uppräkning av lösa ord som de kan tänkas associera till bilden, utan en form av uppsats.
De får titta på bilden i 15 minuter varefter bild nr 2 läggs i apparaten. Samma sak gäller den bilden. Poängtera att det gäller att *fritt berätta.*

Means and Standard Deviations of the Tests.

Subjects Born in 1957

	Boys N=20		Girls N=25	
Variable	$\bar{x}$	s	$\bar{x}$	s
WIT (intelligence) total sum	20.10	4.78	16.16	5.79
classification	13.35	2.68	14.40	1.83
analogies	4.40	1.05	3.75	1.51
opposites	5.30	1.66	4.24	1.56
combinations of number	5.20	1.54	3.76	1.88
formboard (puzzle)	5.20	1.82	4.16	1.91
Creativity				
figure construction	75.85	20.11	75.04	20.66
unusal uses	11.25	4.68	11.28	4.41
Cloze test				
right answer	29.50	4.61	29.88	4.44
synonyms	2.55	1.05	3.04	0.93
parts of speech	3.70	2.36	3.56	1.42
wrong answer	3.65	2.18	3.40	1.92
omitted	1.65	1.90	1.04	1.99
Verbal comprehension	78.65	7.45	76.32	8.59
Recognition	26.70	2.45	26.76	3.47
Picture test				
words pict 7	96.30	47.78	137.32	50.51
nouns pict 7	24.35	11.81	35.08	13.39
" percentage pict 7	26.08	6.14	26.25	4.89
adjectives pict 7	4.25	2.97	8.24	11.85
" percentage pict 7	9.65	17.17	4.26	16.38
verbs pict 7	18.70	9.56	27.52	11.64
verbs percentage pict 7	19.53	3.65	19.85	3.20
residual parts of speech pict 7	49.50	26.88	66.48	29.18
residual parts of speech percentage pict 7	50.18	6.13	49.70	4.98
sentences pict 7+8	20.00	7.99	26.20	8.87
polysyllabics	26.05	10.63	30.24	10.19
qualit marks on essay	2.75	1.02	3.52	0.87
readibility-index	23.15	3.84	22.20	3.14
Word fluency				
Anagram	21.75	6.65	23.08	4.60

THE 1972 STUDY

Means and Standard Deviations of the Tests.

Subjects Born in 1958

	Boys N=25		Girls N=17	
Variable	x̄	s	x̄	s
WIT (intelligence) total sum	18.36	5.89	19.94	4.42
classification	12.38	1.60	13.29	2.29
analogies	4.84	1.65	4.88	1.27
opposites	4.64	1.71	4.88	1.45
combinations of number	4.56	2.29	4.59	1.58
formboard (puzzle)	4.32	1.77	5.59	2.03
Creativity				
figure construction	78.36	22.66	64.12	20.97
unusal uses	9.40	4.42	9.53	6.29
Cloze test				
right answer	27.96	6.61	27.29	5.89
synonyms	3.12	2.28	3.41	1.06
parts of speech	3.24	1.51	4.06	2.38
wrong answer	3.68	2.78	4.53	3.47
omitted	3.05	6.95	1.53	1.81
Verbal comprehension	71.64	14.95	70.59	11.06
Recognition	24.76	3.57	25.24	4.62
Picture test				
words pict 7	110.68	69.98	120.00	55.46
nouns pict 7	27.20	17.33	28.88	12.31
nouns percentage pict 7	26.05	6.97	25.18	6.57
adjectives pict 7	3.96	3.43	5.76	3.90
adject percentage pict 7	3.55	2.92	4.84	3.68
verbs pict 7	22.44	19.29	24.47	11.51
verbs percentage pict 7	18.98	5.38	20.42	3.48
residual parts of speech pict 7	57.12	34.66	60.29	31.26
residual parts of speech percentage pict 7	50.92	8.72	48.58	5.69
sentences pict 7+8	19.16	5.98	21.65	7.34
polysyllabics	21.76	12.34	26.76	12.83
qualit marks on essay	2.60	1.04	3.06	0.90
readability-index	21.06	4.02	21.18	4.63
Word fluency	18.36	5.89	19.94	4.23
Anagram	18.96	5.47	21.24	5.15

Appendix 9 C

Means and Standard Deviations of the Tests.

Subjects Born in 1959/60

	Boys N=14		Girls N=19	
Variable	$\bar{x}$	s	$\bar{x}$	s
WIT (intelligence) total sum	18.73	6.40	18.64	7.53
classification	12.80	1.94	11.71	2.27
analogies	4.13	2.00	4.29	1.90
opposites	5.00	1.77	4.36	1.82
combinations of number	5.13	2.32	4.71	2.46
formboard (puzzle)	4.47	1.77	5.29	2.67
Creativity				
figure construction	72.27	27.64	71.79	27.73
unusal uses	8.67	5.07	9.71	4.41
Cloze test				
right answer	25.93	8.38	26.93	7.77
synonyms	2.87	1.13	3.29	0.83
parts of speech	3.47	1.51	3.93	1.64
wrong answer	3.47	1.96	3.86	3.23
omitted	4.87	7.88	3.00	4.56
Verbal comprehension	69.87	16.65	63.29	15.60
Recognition	24.13	3.83	23.50	4.70
Picture test				
words pict 7	77.40	30.45	102.50	40.53
nouns pict 7	21.67	8.93	29.43	11.14
nouns percentage pict 7	29.08	7.55	29.81	5.46
adjectives pict 7	3.47	2.59	5.21	5.52
adjectives percentage pict 7	5.79	5.69	4.27	3.52
verbs pict 7	16.27	5.51	18.64	7.86
verbs percentage pict 7	22.15	7.93	18.79	4.01
residual parts of speech pict 7	35.73	19.87	50.07	23.30
residual parts of speech percentage pict 7	42.67	17.01	48.07	4.75
sentences pict 7+8	17.53	5.85	21.14	6.54
polysyllabics	16.73	8.05	22.50	9.01
qualit marks on essay	1.80	0.86	2.93	0.92
readibility-index	21.07	3.17	20.07	4.80
Word fluency	18.73	6.40	18.64	7.53
Anagram	18.33	8.01	20.29	7.58

Appendix 10

THE 1972 STUDY

Factor Analysis of 34 Linguistic Variables. N=120
The Highest Value per Variable is Underlined

Variable	Rotated factor loadings 1	2	3	4	5	6	7	8	9	Final communality h^2
1. WIT	.16	.57	.43	.03	-.01	.04	-.05	.23	.10	.62
2. Anagram	.21	.58	.22	-.01	-.30	.12	.08	.07	.05	.55
3. Word fluency	.15	.46	-.17	.02	-.09	.29	.02	.14	-.18	.41
4. Verbal comprehension	.14	.86	.12	.04	.05	.07	-.14	.09	.03	.82
5. Recognition I	.15	.82	.08	.12	.04	-.10	.10	.11	-.10	.77
6. " II	.16	.81	-.06	.00	.11	-.05	.01	.13	-.17	.74
7. " III	.13	.62	-.04	.02	.15	.07	.35	-.07	.20	.60
8. " I+II+III	.07	.89	.03	.09	.11	-.09	.03	.13	-.15	.87
Cloze test										
9. Right answer	.12	.77	.42	.12	-.12	.11	-.14	-.08	.12	.87
10. Synonyms	.16	-.02	-.19	.09	-.06	-.01	.04	.15	.80	.74
11. Right wordclass	-.02	.05	-.78	.00	.00	.02	-.12	-.12	.16	.66
12. Wrong answer	-.03	-.37	-.71	.02	-.10	-.06	-.03	.06	.05	.66
13. Omitted	-.17	-.72	.14	-.13	.17	.11	.25	.11	-.32	.81
14. Word pict 7	.90	.09	.03	.22	-.10	.14	-.16	.17	-.10	.96
15. " " 8	.83	.18	.01	.07	.15	-.07	.25	-.02	.21	.86
16. " " 7+8	.96	.15	.02	.16	.02	.05	.03	.09	.04	.98
17. Nouns	.88	.05	.07	-.14	-.18	.16	-.08	.16	-.08	.91
18. Percentage nouns	-.21	-.16	.04	-.89	-.08	.06	.08	.02	-.02	.87
19. Adjectives	.52	-.02	-.01	-.17	.06	-.02	.15	-.01	.16	.35
20. Percentage adjective	-.01	.03	.03	.03	.84	.06	.01	-.15	.07	.73
21. Verbs	.81	.07	.03	.18	-.06	.08	-.43	.18	-.14	.95
22. Percentage verbs	.06	.02	-.14	-.15	.09	-.18	-.86	-.03	.02	.83
23. Residual parts of speech	.49	.16	-.07	.13	-.09	-.02	.12	.09	-.34	.43
24. Percentage parts parts of speech	.16	.14	.03	.81	-.13	.07	.37	.06	.07	.87
25. Sentences	.86	.22	-.05	-.01	-.01	-.34	-.12	.09	.07	.93
26. Polysyllabics[1]	.79	.31	.10	.04	.01	.36	-.03	.14	.03	.89
27. Word/sentences	.23	-.16	.12	.23	.28	.69	.29	.02	-.04	.79
28. Polysyllabics/ words (sumx100)	-.06	.03	.03	-.06	.76	.17	-.07	.11	-.10	.65
29. Read ability index	.03	.20	.04	-.12	.13	.88	.04	.06	.05	.86
30. Qualit marks on essay	.65	.31	.18	.31	-.14	.19	-.07	.06	.13	.73
31. Words essay 1	.89	.12	-.01	.23	-.09	.08	-.13	.13	.13	.92
32. " " 2	.87	.17	.01	.06	.13	-.01	.17	-.01	.16	.86
33. Creativity 1	.15	.22	.14	.07	-.13	.04	-.07	.80	.09	.77
34. " 2	.33	.13	-.02	-.04	.08	.06	.08	.76	.03	.72
Cumulative proportion of total variance	.32	.45	.51	.57	.62	.66	.70	.73	.76	
Eigenvalues	10.76	4.39	2.34	1.90	1.72	1.37	1.27	1.16	1.03	

[1] Words with sex or more syllables

Appendix 11

SOSP-projektet
Institutionen för pedagogik
LÄRARHÖGSKOLAN I LINKÖPING

IFYLLES AV BARNET

Intresseschema. The Interest Blank

För att få en uppfattning om vad de elever som är med i vår undersökning sysslar med på fritiden ber vi Dig fylla i detta intresseformulär. Sätt ett kryss för det som stämmer in på Dig. Tack för hjälpen!

Namn:....................................

Jag brukar syssla med att:	aldrig	sällan	ibland	ofta	mycket ofta
1. Lyssna på musik tillsammans med kamrater	☐	☐	☐	☐	☐
2. Lyssna på musik ensam	☐	☐	☐	☐	☐
3. Gå på party	☐	☐	☐	☐	☐
4. Vara med i en förening eller klubb	☐	☐	☐	☐	☐
5. Se på idrottstävlingar	☐	☐	☐	☐	☐
6. Spela teater	☐	☐	☐	☐	☐
7. Dansa	☐	☐	☐	☐	☐
8. Spela något instrument tillsammans med kamrater	☐	☐	☐	☐	☐
9. Spela något instrument ensam	☐	☐	☐	☐	☐
10. Väva	☐	☐	☐	☐	☐
11. Läsa tidningar	☐	☐	☐	☐	☐
12. läsa böcker	☐	☐	☐	☐	☐
13. Titta på TV hemma	☐	☐	☐	☐	☐
14. Umgås med och sköta om djur	☐	☐	☐	☐	☐
15. Bygga modellflygplan	☐	☐	☐	☐	☐
16. Bygga andra modeller	☐	☐	☐	☐	☐
17. Skriva maskin	☐	☐	☐	☐	☐

	aldrig	sällan	ibland	ofta	mycket ofta
18. Spela spel tillsammans med kamrater	☐	☐	☐	☐	☐
19. Umgås med kamrater	☐	☐	☐	☐	☐
20. Sjunga i kör	☐	☐	☐	☐	☐
21. Spela fotboll	☐	☐	☐	☐	☐
22. Spela ishockey	☐	☐	☐	☐	☐
23. Spela handboll	☐	☐	☐	☐	☐
24. Vara med i lagsport	☐	☐	☐	☐	☐
25. Rida	☐	☐	☐	☐	☐
26. Lyssna på radio ensam	☐	☐	☐	☐	☐
27. Handarbeta	☐	☐	☐	☐	☐
28. Fantisera eller dagdrömma	☐	☐	☐	☐	☐
29. Teckna eller måla	☐	☐	☐	☐	☐
30. Tala i telefon	☐	☐	☐	☐	☐
31. Dansa folkdans	☐	☐	☐	☐	☐
32. Lägga pussel	☐	☐	☐	☐	☐
33. Läsa läxor	☐	☐	☐	☐	☐
34. Författa historier	☐	☐	☐	☐	☐
35. Skriva dikter	☐	☐	☐	☐	☐
36. Prata och diskutera	☐	☐	☐	☐	☐
37. Vara med i scouterna eller liknande	☐	☐	☐	☐	☐
38. Lösa korsord	☐	☐	☐	☐	☐
39. Sköta blommor och trädgård	☐	☐	☐	☐	☐
40. Bygga tekniska apparater	☐	☐	☐	☐	☐
41. Papp-, trä- eller metallslöjd	☐	☐	☐	☐	☐
42. Gå på ungdomsgården	☐	☐	☐	☐	☐
43. Gå på ungdomsträffar i kyrkan	☐	☐	☐	☐	☐
44. Undersöka växter	☐	☐	☐	☐	☐

	aldrig	sällan	ibland	ofta	mycket ofta
46. Samla insekter	☐	☐	☐	☐	☐
47. Samla mynt	☐	☐	☐	☐	☐
48. Samla frimärken	☐	☐	☐	☐	☐
49. Vara med i en frimärksklubb	☐	☐	☐	☐	☐
50. Vara ute och cykla tillsammans med kamrater	☐	☐	☐	☐	☐
51. Vara ute och cykla själv	☐	☐	☐	☐	☐
52. Vara med och göra en skoltidning	☐	☐	☐	☐	☐
53. Sköta om att jag har "sköna" kläder	☐	☐	☐	☐	☐
54. Hitta på saker som mina kamrater tycker är roliga	☐	☐	☐	☐	☐
55. Skämta och skoja med mina kamrater	☐	☐	☐	☐	☐
56. Gå på bio tillsammans med jämnåriga	☐	☐	☐	☐	☐
57. Samla bilder, etiketter och urklipp	☐	☐	☐	☐	☐
58. Sköta om mitt utseende (make-up m.m.)	☐	☐	☐	☐	☐
59. Umgås med familjen eller släkten	☐	☐	☐	☐	☐
60. Experimentera (fysik-kemi m.m.)	☐	☐	☐	☐	☐
61. Hjälpa till med hushållet	☐	☐	☐	☐	☐
62. Gå själv på stan (titta i skyltfönster m.m.)	☐	☐	☐	☐	☐
63. Åka till landet eller på resor tillsammans med familjen	☐	☐	☐	☐	☐

A. Hur många kvällar i veckan vistas Du huvudsakligen i Ditt hem?

Ingen kväll ☐
1-3 kvällar ☐
4 eller fler ☐

B. Har Du under vårterminen 1972 löst kort till fritids/ungdomsgård? ☐ Ja ☐ Nej

C. Hur många gånger per månad brukar Du vara med i verksamheten vid en klubb, förening eller ungdomsgård?

Ingen gång ☐
1-5 gånger ☐
5-8 gånger ☐
9 el. fler ☐

D. Har Du eget rum hemma? ☐ Ja ☐ Nej

Factor Analysis of 62 Interest Variables.

The Highest Value per Variable is Underlined. N=120.

For Identification of the Content of each Item, See Test Battery (Only in Swedish Appendix no 11)

Item no	Rotated factor loadings 1	2	3	4	5	6	7	8	9	10	h^2
1.	-.01	-.22	.31	-.17	.22	-.22	-.01	-.55	-.09	.20	.73
2.	.03	-.04	.02	-.12	-.11	-.03	.05	-.80	-.05	-.08	.74
3.	-.17	.11	.47	.11	-.06	-.01	.02	-.09	-.19	-.07	.65
4.	.18	.04	-.03	.45	-.13	-.12	.49	-.04	.07	-.11	.81
5.	.07	-.04	.06	.79	.04	.15	-.14	.04	.11	-.06	.74
6.	.04	-.81	.10	-.11	-.15	-.04	.06	.03	-.01	-.04	.77
7.	.25	-.15	.41	-.31	-.14	.03	-.08	-.03	-.09	-.04	.79
8.	-.03	-.15	.11	-.01	-.03	-.15	.01	-.07	-.01	-.80	.76
9.	-.01	.05	-.02	-.04	-.08	.04	.04	-.04	-.07	-.87	.83
10.	.10	-.72	.01	.02	.03	.03	.20	-.06	-.05	-.09	.65
11.	-.13	.11	.14	.08	-.14	-.11	-.06	-.06	.72	.14	.71
12.	.02	.13	-.20	-.22	-.22	-.11	-.02	-.11	.38	-.17	.72
13.	-.04	-.08	-.22	.30	.10	-.12	-.23	-.14	.63	.09	.71
14.	.09	-.06	.01	-.05	-.01	-.03	-.02	.14	.03	.01	.69
15.	-.78	.02	.05	.15	.06	-.17	-.03	.10	.11	.11	.78
16.	-.77	.02	.03	.13	.08	-.19	.01	.06	.15	.05	.80
17.	-.02	-.16	.03	-.09	-.45	-.17	-.13	.11	.13	-.15	.71
18.	-.10	-.04	.02	.21	-.05	.01	.05	-.07	.11	.03	.68
19.	-.09	.07	.55	.14	-.01	-.14	.07	-.04	-.16	.16	.71
20.	.09	-.33	.01	.22	-.09	.16	.12	-.09	.03	-.43	.67
21.	-.22	.06	-.10	.82	.04	-.16	-.05	.12	.04	.06	.82
22.	-.43	.11	-.04	.68	.09	-.13	.04	-.02	.05	.08	.80
23.	-.03	-.16	.14	.23	.11	.05	-.09	.08	-.04	-.02	.78
24.	-.03	.03	.01	.66	-.09	.02	.04	.01	-.04	.01	.80
25.	.19	-.06	.01	-.18	-.17	-.08	.05	.05	-.02	.05	.70
26.	.22	.07	-.01	.07	-.09	.01	.05	-.70	.23	.05	.70
27.	.39	-.24	-.06	-.22	.12	.09	.07	-.05	.09	-.24	.66
28.	.14	.19	-.11	-.17	-.45	.14	-.07	-.30	.01	-.01	.76
29.	.11	-.23	.06	-.13	-.37	.05	-.32	.06	.15	-.06	.74
30.	.10	-.04	.71	-.08	-.08	.22	.11	-.17	.15	-.04	.66
31.	.08	-.09	.11	.02	.07	.12	.25	-.07	-.03	-.09	.67
32.	-.17	-.39	-.05	-.06	-.02	.06	-.10	-.17	.01	.06	.70
33.	.09	-.03	-.01	.06	.11	-.09	.03	-.16	.06	-.04	.72
34.	-.02	-.17	.04	-.01	-.77	-.06	.05	.01	.12	-.03	.70
35.	.11	.04	.19	.01	-.57	.03	-.01	-.27	-.18	-.10	.61
36.	-.22	.06	.11	.04	-.41	.16	-.04	-.12	.25	.06	.69
37.	.12	-.14	-.19	-.05	.06	.05	.57	.05	.09	-.04	.68
38.	.29	.15	.03	.07	.13	.09	-.09	-.03	.24	-.19	.72
39.	-.01	-.21	.02	.07	.04	-.03	.13	-.19	-.05	-.11	.59
40.	-.73	.06	-.17	-.04	-.05	.07	.11	.12	-.06	-.11	.70
41.	-.58	-.10	-.01	.18	.04	-.09	-.27	-.14	-.10	-.17	.68
42.	-.07	-.10	.71	.01	-.03	-.14	-.11	.09	-.07	.03	.71
43.	.03	-.29	.08	-.17	-.03	.10	.66	-.17	-.09	-.01	.66
44.	-.22	-.17	-.07	-.06	-.04	-.08	.07	.01	-.08	-.02	.77
45.	-.08	-.05	-.07	-.09	-.09	-.25	-.01	.05	-.05	.05	.74
46.	-.32	.03	-.17	.08	.01	-.27	.12	.05	-.08	.09	.71
47.	-.24	-.14	-.15	.08	.03	-.69	-.09	-.10	.11	-.08	.72
48.	.02	.07	.01	.01	-.10	-.81	.02	-.04	.10	-.05	.72
49.	-.23	-.02	.12	.05	.06	-.09	-.01	-.10	.11	.01	.77
50.	-.26	-.07	-.13	.12	-.09	.20	.10	-.20	.17	-.11	.77
51.	.01	-.23	-.05	.03	-.23	-.06	.08	.01	.10	-.19	.68
52.	.24	-.03	.45	-.14	-.01	.21	.03	-.06	-.12	-.16	.58
53.	.08	-.12	.18	.12	-.05	-.10	.06	-.17	-.01	-.09	.75
54.	.03	-.01	.38	.05	-.06	-.08	.10	.05	.04	-.17	.71
55.	.10	.02	.51	.10	-.01	.10	-.15	.08	-.11	-.12	.63
56.	.17	.14	.03	-.08	-.45	-.25	.18	-.04	-.04	-.17	.73
57.	.41	-.05	.47	-.21	-.03	.01	-.06	-.01	.13	-.08	.69
58.	.03	.01	-.11	-.03	-.05	.03	.10	-.08	.67	-.11	.75
59.	-.69	.07	-.02	-.06	-.01	.14	-.01	-.06	.04	-.04	.71
60.	.25	-.22	.03	.02	-.10	.40	.16	-.26	.21	-.17	.63
61.	.01	-.08	.37	-.07	-.09	.13	.02	-.32	-.02	-.03	.65
62.	.01	-.15	.08	-.10	.02	-.09	.44	.11	.38	-.33	.74
Cum prop of tot var	.11	.19	.26	.32	.36	.40	.44	.47	.50	.52	
Eigen-values	6.96	5.11	4.34	3.23	2.79	2.46	2.21	1.92	1.75	1.67	

Appendix 13

Means and Standarddeviations of the Interest Variables

Group 1. Interest in construction N=126

Item	Item no	$\bar{x}$	sd
To build aeroplane models	15	1.67	.99
To build other models	16	1.92	1.16
To build technical models	40	1.64	1.14
To work by hands	41	2.59	1.29
To make experiments	59	1.72	.98

Group 2. Esthetic interest

Item	Item no	$\bar{x}$	sd
To perform in plays	6	1.44	.76
To weave	10	1.12	.41
To make handicraft	27	1.88	1.09
To draw or point	29	3.10	1.18
To solve jigsaw puzzles	32	1.74	.78

Group 3. Interest in social relations

Item	Item no	$\bar{x}$	sd
To participate in parties	3	2.21	.88
To dance	7	2.60	1.26
To be together with friends	19	4.27	.87
To phone	30	3.33	.88
To go to the youth club	42	2.19	1.32
To go to the cinema with friends of the same age	55	2.71	.78

Group 4. Interest in sports

Item	Item no	$\bar{x}$	sd
To see sport competitions	5	3.20	1.11
To play football	21	2.98	1.49
To play icehockey	22	2.58	1.44
To participate in a sport team	24	2.97	1.45

THE 1972 STUDY

Means and Standarddeviations of the Interest Variables

Group 5. Interest in verbal produktions

Item	Item no	$\bar{x}$	sd
To use a typewriter	17	2.01	.96
To daydream	28	2.71	1.23
To produce written stories	34	1.75	1.03
To write poems	35	1.30	.70
To participate in discussions	36	3.30	1.06

Group 6. Interest in collecting

Item	Item no	$\bar{x}$	sd
To collect insects	45	1.18	.60
To collect coins	46	1.83	1.16
To collect stamps	47	2.10	1.33
To take part in a stamp-collecting club	48	1.27	.86
To collect picture labels etc	56	2.13	1.20

Group 7. Interest in club activities

Item	Item no	$\bar{x}$	sd
To be a member of a social group	4	3.07	1.50
To be a member of a scout patrol (of similar)	37	1.75	1.27
To participate in the church youth activities	43	1.29	.82

Group 8. Musical interest

Item	Item no	$\bar{x}$	sd
To play an instrument with friends	8	1.52	.96
To play an instrument alone	9	2.16	1.46
To sing in a choir	20	1.65	1.26

Manual for Sentence Structure Analysis

Språklig analys med hjälp av Mamban. (Ur Dahlén, 1974, s 24-29)

Alla icke-lingvistiska informationer om texten samlas och kodifieras i ett flerställigt signum i kolumn 1 (IN), exempelvis kön, ålder, socialgrupp, betyg m m. Uppgifterna måste vara sådana att de särskiljer de olika texter/individer som behandlas. Naturligtvis kan det ibland vara lämpligt att arbeta med ett par eller flera datakort för varje individ. Det gäller då bara att ha en gemensam "styrningsfaktor" i kol 1 eller annan lämplig kolumn, ett slags individuellt nummer.

Härefter delas texten in i makrosyntagmer och - om det gäller skriven text - även i grafiska meningar och stycken. Makrosyntagmerna numreras i ordningsföljd för varje informant och detta nummer införes i kolumn 2 (MS). Orden i texten skrivs under varandra på protokollet, ett på varje rad. Informantnummer, makrosyntaxnummer och - löpande inom varje makrosyntagm - ordnummer (kol 3 ØNR) skrivs ut vid varje ord. Genom detta system får samtliga ord i ett textmaterial sin exakta plats och kan därigenom identifieras.

Kolumnerna US, DK, S1 - S6 används till uppgifter om syntax och resten av kolumnerna, L1 - L4, innehåller lexikaliska uppgifter. I US-kolumnen anges bisatsers, satsförkortningars och övriga med bisatser jämställda konstruktioners beteckningar (se nedan under Dummiers d). I DK-kolumnen redovisas dessa satsers djup.

Exempel:

IN	MS	ØNR	US	DK	Text	L1	L2	L3	S1
2413	17	1			0000	<<			
2413	17	2			han	PØ	DP	HH	SS
2413	17	3			kommer	VV	PS		FV

Numret 2413 kan då dels innehålla en karakteristik av informanten, dels dennes individuella nummer. MS 17 är den sjuttonde makrosyntagmen i informant 2413:s utsaga. Ord nr 1 är en dummy (se nedan). 0000, som har markerats som en påståendesats i L1-kolumnen (<<). Ord nr 2 är han. PØ = pronomen, som är definit (DP) och personbetecknande (HH); han är subjekt (SS) i satsen. Kommer är ett vanligt verb, VV, och står i presens. PS; kommer är det finita predikatsverbet i satsen, FV.

2. Dummies

Dummyord sätts in i texten i följande fall:

a) == som ersättare för ett icke utsatt relativt ord
(ex grenen == du sitter på)

b) ++ som ersättare för icke utsatt samordnande konjunktion
(ex bilar ++ cyklar och bussar)

c) 0000 inleder makrosyntagm. Dummien karakteriseras därefter i L1-kolumnen som påståendesats, frågande eller imperativisk sats. (Tecken <<, ?? resp !!)

d) en fyrställig siffra sätts ut omedelbart före underodnad sats, satsförkortning eller inskjuten sats. Bisatser av första graden i en makrosyntagm kallas 1000, 2000, 3000 etc. Bisatser av andra graden inuti basats kallas 1100, 1200, 1300 etc; inuti bisats 2000 kallas de 2100, 2200, 2300 etc.

Ex. Sven 1000 som du träffade 1100 när du var hos mig kommer hit 2000 innan det blir kväll.

Fördelen med dessa bisatsdummies demonstreras i följande ex:

Ex 1

TEXT	S1	S2
Lasse	SS	
vet	FV	
att	ØØ	UK
det	ØØ	SS
regnar	ØØ	FV

Ex 2

US	DK	TEXT	S1	
		Lasse	SS	(Vanligt subjekt)
		vet	FV	(Finit verb)
		1000	ØØ	(Dir obj)
1000	1	att	UK	(Underordnad konj)
1000	1	det	SS	
1000	1	regnar	FV	

1) Genom att använda dummy kan man markera bisatsens satsdelsfunktion i S1-kolumnen samtidigt som man kan placera satsens övriga primära satsdelar i samma kolumn, S1-kolumnen.

2) Av siffrorna i US-kolumnen framgår den underordnade satsens längd och det blir också lätt att skilja bisats- och huvudsatsmaterial.

3) Man kan i L1-kolumnen vidare beskriva bisatsen.

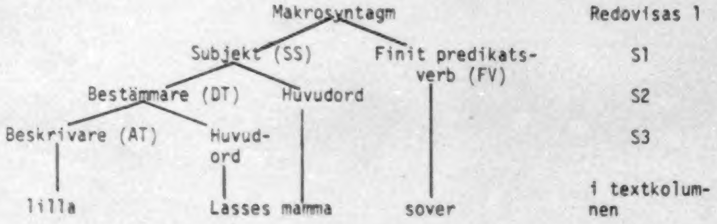
3. Den syntaktiska analysen

Som tidigare nämnts är min uppgift att i första hand göra en syntaktisk analys av SOSP-materialet i enlighet med Mamba-metoden. En ordklassbestämning har redan gjorts enligt traditionell metod, varför en sådan anlys enligt Mamban kommer att göras först senare.

Mambans syntaktiska analys har starkt samband med traditionell satslösning. Teleman (1974) framhåller dock, att analysen visserligen i första hand avspeglar en yclig syntaktisk struktur, men att den även ger ledtrådar till en djupstruktur i enlighet med den generativa grammatikens s k standardteori.

Vidare har man strävat efter en så semantiskt orienterad funktionell analys som möjligt, speciellt i de fall då formella grammatiska kriterier skulle strida mot känslan för komplexitet och struktur.

Här presenteras ett exempel för att belysa principerna för den syntaktiska notationen:


Makrosyntagm
Subjekt (SS)
Finit predikatsverb (FV)
Bestämmare (DT)
Huvudord
Beskrivare (AT)
Huvudord
lilla
Lasses
mamma
sover
Redovisas i
S1
S2
S3
i textkolumnen

Jfr med notationen i protokollet:

TEXT	S1	S2	S3
lilla	SS	DT	AT
Lasses	SS	DT	
mamma	SS		
sover	FV		

Huvudprincipen är alltså, att de primära satsdelarna, subjekt, finit predikatsverb, infinit verb, direkt och indirekt objekt, tidsadverbial o s v, redovisas i S1-kolumnen, medan bestämningarna noteras i de följande S-kolumnerna.

Ex ur SOSP-materialet.

Vid analys av SOSP-uppsatserna har jag använt alla de kolumner som erfordras för en syntaktisk analys. Dessutom har L1-kolumnen använts för att notera typ av makrosyntagm, bisats, satsförkortning, koordinationsfras liksom skiljetecken o dyl. Av skiljetecknen har jag vid denna första textbehandling endast fört in punkt, komma utrops- och frågetecken i S-kolumn. Grafisk mening är inte heller markerad annat än genom vad som kan utläsas av notationen av stora skiljetecken och stor bokstav.

Här följer nu en presentation av samt en kommentar till ett par analyserade sidor. Se "nyckel" i bil 5.

US	DK	TEXT	L1	S1	S2	S3	S4
		0000	<<	MS			
		+på		RA	PR		
		en		RA	DT		
		liten		RA	AT		
		gård		RA			
		ute		RA	ET		
		på		RA	ET	RA	PR
		landet		RA	ET	RA	
		bor		FV			
		en		SS	DT		
		familj		SS			
		1000	RC	SS	ET		
1000	2	som		SS			
1000	2	heter		FV			
1000	2	Johansson		SF			
			IP	IP			

Makrosyntagmen är en påståendesats (<<) och utmärks i L1 och S1. Det långa rumsadverbialet (RA) delas upp så att "ute på landet" i

S2-kolumnen markeras som efterställt attribut till "på en liten gård" "på landet" betraktas som en rumsadverbial bestämning till "ute". Subjektet "en familj som heter Johansson" förses med dummy, 1000, som får dels beteckningen för subjekt, SS, dels beteckningen ET för efterställt attribut till "en familj". RC i L1-kolumnen betyder relativ bisats. Genom att dummyn 1000 har två noteringar till höger, SS och ET, blir djupet DK = 2.

US	DK	TEXT	L1	S1	S2	S3	S4
		0000	<<	MS			
		+de		SS	DT		
		båda		SS	DT		
		makarna		SS			
		1000	AF	SS	AN		
1000		+Kalle		SS			
1000		och		SS	++		
1000		+Stina		SS			
		har		FV			
		en		OO	DT		
		liten		OO	AT		
		son		OO			
		2000	RC	OO	ET		
2000	2	som		SS			
2000	2	heter		FV			
2000	2	+August		SP			
				IP			

"De båda makarna Kalle och Stina" är subjekt, SS. Kalle och Stina är apposition och får beteckningen appositonsfras AF i L1-kolumnen och AN i S2-kolumnen. Beträffande objektet så betraktas relativsatsen som efterställt attribut till "en liten son".

NOTATION TILL PROTOKOLL

NYCKEL TILL SYNTAXDELEN

ES	Egentligt subjekt
FS	formellt subjekt
SS	övrigt subjekt
FV	finit predikatsverb
IV	infinit verb
SP	bunden subj predikatsfyllnad
ØP	obj predikatsfyllnad
EØ	egentligt objekt
FØ	formellt objekt
IØ	indirekt objekt
ØØ	övrigt objekt
VØ	infinitivfrasen i obj m inf
VS	infinitivfrasen i sub m inf
RA	rumsadverbial
TA	tidsadverbial
KA	komparationsadverbial
ØA	objektsadverbial
NA	negationsadverbial
VA	varslande adverbial
+A	konjunktionellt adverbial
MA	talarattitydsadverbial
CA	framhävande adverbial
AG	agent
XA	så att säga m synonymer
AA	övrigt adverbial
AT	framförställt adj attribut
DT	" bestämmarattr
AN	apposition
PT	predikativt attribut
EF	relativsatsen i emf omskrivning
DB	dubbelt satsled
ET	övrigt efterställt attribut
+F	koordinationsfras på satsnivå
XF	fundamentfras
IM	infinitivmärke
PL	verbpartikel
PR	preposition
++	samordnande konjunktion
UK	underordnad konjunktion
XX	obestämbar satsdel

b. Översikt över lexikaliska beteckningar

L1	L2	L3	L4
PN Egennamn MN Metasubstantiv AN Adjektivsubstantiv VN Verbalsubstantiv NN Övr substantiv	DD best art suffix	HH Person-simplex HS Person-sms	GG Genitiv-suffix
P0 Pronomen	PP 1 o 2 pers DP 3 pers Best art Demonstr Determ CP Recipr XP Reflex 0P Opers det KP Komparat SU Superl FP Frågande NP Nekande RP Relativa TP Totala ZP Öriga	HH Person	GG Genitiv-suffix Possessiv AA Objektsform
EN Obest art Grundtalet 1 R0 Övr räkneord	0T Ordningstal	HH Person	GG Genitiv-suffix
AJ Adjektiv	KP Komparativ SU Superlativ	HH Person	GG Genitiv-suffix
AV vara BV bli HV ha WV vilja QV kunna MV måste KV komma/_(...) att SV skola GV göra FV få VV övr verb	PS Presens PT Preteritum IP Imperativ PK Pret konj 0P Pres konj IV Infinitiv SN Supin	SM Sms	PA Passiv

L1	L2	L3	L4
TP Pret ptc SP Pres ptc		SM Ickeperson-sms HM Person-sms HH Person-simplex	PA Passiv
AB Adverb	DA Definita FA Frågande NA Nekande TA Totala RA Relativa JA Jämförande KP Komparativa SU Superlativa JU ju/ ...desto SA så (=dubbel satsdel) QC Kopulativa MN Adversativa KU Explanativa KS Konsekutiva ZK Övr konj adverb ZA Övr adverb		
PR Preposition	KP Komparativ SV Superlativ		
IM Infinitivmärke			
++ Samord konjunkt	ØC Kopulativ EL Disjunkt MN Advers KU Explan KS Konsek	PG Progressiv KR Korrektion	
UK Underordnad konj	TE Temporal KU Kausal KS Konsekutiv KD Konditional KM Komparativ		

L1	L2	L3	L4
	KC Koncessiv FI Final AT Allm u -o att 0M Interr om, huruvida		
§§ Påst mening ?? Fråg mening !! Imper mening UU Utropsmening TT Tilltalsfras YY Interj fras	DC Direkt anföring	RR Rubrik	
RC Relativsats ZC Allm rel sats FC Om-frågesats VC V-frågesats AC Att-sats KC Komparativsats JC Ju-sats CC Övr konj sats FK Frågeformad kond sats BK Övr huvudsatsformad kond sats 0K Omkategoriserad sats			
+F Koord fras FK Komparativfras PF Predikativfras AF Appositionsfras MF Med-fras			

L1	L2	L3	L4
IF Infinitivfras XF Övr fras			
XX Oklassificerbar ordklass EH Tvekljud RJ Junktur PU Paus			

THE 1972 STUDY

Factor Analysis of 42 MAMBA Variables.

The Highest Value per Variable is Underlined.

THE MAMBA Variable in Swedish (1-34), N=40

		Rotated factor loadings										
Nr	Variable	1	2	3	4	5	6	7	8	9	10	h^2
1.	Makrosyntagmer	.15	.02	.37	.52	.24	.11	.08	.50	.24	.33	.92
2.	M S påstående	.24	.02	.28	.50	.18	.04	.11	.51	.30	.23	.84
3.	M S frågande	-.01	-.10	.48	.49	-.15	.42	.15	-.16	-.19	.19	.80
4.	R C relativa bisatser	.47	.02	.13	.27	-.02	.03	.42	.42	.34	-.04	.79
5.	Övriga konj satser	.16	.19	.11	.03	-.10	-.16	.06	.83	.25	-.16	.89
6.	Koord fraser	.08	.11	.87	-.01	.02	.06	.12	.34	.13	-.09	.93
7.	Infinitiv fraser	.19	.13	.02	.02	.30	.73	.20	.35	.06	-.24	.91
8.	Djup koefficient 0	.10	-.10	.87	.17	.07	.20	.03	.18	.07	.09	.89
9.	" " 1	.08	.06	.25	.20	.07	.34	.10	.80	.07	.09	.89
10.	" " 2	.67	.22	.15	.31	-.01	.18	.27	.35	.14	-.01	.86
11.	" " 3	.08	.18	-.03	.11	-.19	.08	.34	.54	.56	-.15	.87
12.	" " 4	.64	-.19	-.06	.05	-.14	.13	.11	.21	.23	-.46	.81
13.	Satsnivå 1000	-.06	.04	.28	-.06	-.06	.27	.48	.40	-.20	-.14	.61
14.	" 1100	.34	.21	.23	.12	-.13	.32	.30	.48	.41	-.03	.84
15.	Egentligt subj	.26	.07	.04	.14	.10	-.01	.87	.08	.11	.13	.89
16.	Formellt "	.02	.10	.06	.17	.23	.09	.84	.10	.25	-.14	.91
17.	Övrigt "	.33	.10	.22	.27	.36	.18	.07	.53	.48	.11	.93
18.	Finit predikatsverb	.24	-.04	.39	.41	.15	.06	.15	.60	.35	.23	.96
19.	Infinit verb	.22	.03	.20	.09	.16	.15	.08	.81	.08	.13	.83
20.	Subjektiv pred fylln	.06	.18	-.18	.84	.02	-.01	.20	.03	.11	-.01	.83
21.	Övrige objekt	.36	-.09	.36	.53	.28	-.03	-.10	.26	.04	-.12	.72
22.	Rumsadverbial, S1	.22	.16	.25	-.07	.11	.03	.34	.18	.73	.06	.84
23.	Tidsadverbial, S1	-.12	.24	.08	.88	.31	-.06	.08	.22	-.01	-.05	.88
24.	Objektsadverbial, S1	.08	-.05	.15	.03	.31	.56	.27	.26	.35	.27	.78
25.	Konjunktionellt adverbial, S1	.12	.08	.01	.09	.81	.24	.13	.03	.15	.03	.78
26.	Övr adverbial, S1	.21	.21	.17	.68	-.22	.40	.02	.23	.07	-.08	.85
27.	Koord fras, S1	.07	.09	.91	-.02	.05	.09	.06	.24	.08	-.10	.93
28.	Infinitivmärke, S1	.20	.21	.26	.06	.08	.85	-.05	.12	.06	.08	.92
29.	Verbpartikel, S1	-.16	.26	.13	.13	.36	.30	.05	.63	.22	.13	.81
30.	Rumsadverbial, S2	.16	.03	.01	.14	.15	.07	-.01	.23	.83	-.04	.82
31.	Övr adverbial, S2	.47	.12	.06	.24	.26	.21	.12	.30	.29	.09	.60
32.	Framförs adj attr, S2	.67	.16	.06	.16	.39	.39	-.01	.01	.11	.11	.83
33.	" best attr, S2	.31	.07	.21	.35	.57	.20	.24	.27	.36	-.02	.90
34.	Övr attr, S2	.53	.06	.15	.02	.23	.13	.38	.01	.38	.24	.72
35.	WIT	.20	.77	-.07	.23	-.10	.14	.05	.16	.19	-.14	.80
36.	Anagram	.24	.52	-.04	-.01	-.54	.30	-.18	-.06	.22	.03	.78
37.	Word fluency	.13	.50	-.22	-.10	-.03	.08	-.06	.26	.05	.62	.78
38.	Word understanding	-.01	.85	.06	.20	.04	.06	.02	.17	.05	.25	.87
39.	Recognition	.10	.60	-.16	.25	-.01	.13	.07	.28	-.25	.32	.72
40.	Right answ cloze	.04	.88	.19	-.02	.20	.01	.19	-.02	.07	-.07	.90
41.	Readability index	.66	.36	.15	-.29	-.05	-.04	.05	.28	.04	.12	.78
42.	Essay work	.37	.28	.27	.13	.01	.03	.06	.62	.09	.01	.70
	Cum prop of tot var	.37	.45	.53	.59	.65	.69	.74	.77	.80	.83	
	Eigenvalues	15.67	3.58	2.88	2.32	2.27	2.00	1.84	1.56	1.27	1.11	